DOCUMENT RESUME

ED 340 503 PS 020 231

AUTHOR Donnay, France
TITLE Controlling Fertility.
INSTITUTION International Children's Centre, Paris (France).
PUB DATE 91
NOTE 87p.
AVAILABLE FROM International Children's Centre, Chateau de Longchamp, Bois de boulogne, 75016 Paris, France ($14.00 each; 6-issue annual subscription, $40.00).
PUB TYPE Collected Works - Serials (022)
JOURNAL CIT Children in the Tropics; n193/194 1991

EDRS PRICE MF01/PC04 Plus Postage.
DESCRIPTORS Adolescents; *Birth Rate; *Contraception; Cultural Context; Demography; Developing Nations; *Family Planning; Females; Foreign Countries; Global Approach; Males; Overpopulation; *Population Trends; Pregnancy; Program Development; *Program Evaluation; *Social Services; Young Adults
IDENTIFIERS *Fertility; Sterilization

ABSTRACT

Recent developments in fertility control are presented in relation to the global demographic situation. Discussion focuses on changes in scientific knowledge and concepts that have shifted the focus from birth control to planned parenthood to the notion of controlled fertility. The place of family planning programs, including their socioeconomic implications, is examined. Contraceptive methods are described in terms of their advantages, shortcomings, and medical and cultural considerations. Examples of programs for young people are drawn from Jamaica and Ethiopia. The organization of family planning programs is discussed, with emphasis on the fact that family planning is a team project requiring coordinated training of the health agents involved. Some family planning programs in Tunisia, Rwanda, Togo, Burkina Faso, and Bangladesh are used to illustrate the point. The sensitive problem of contraception for adolescent girls and young women, and the role of men in contraception, is described. A final chapter covers the diagnostic, formative, ongoing, and evaluative aspects of programs. Appended is a sample record card for family planning from the Ministry of Health in Rumania. Contains 19 references. (LB)

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CHILDREN
IN THE TROPICS

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CONTROLLING FERTILITY

1991 - N° 193 / 194

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INTERNATIONAL CHILDREN'S CENTRE – PARIS

The International Children's Centre was created by the French government in 1949, on the initiative of Professor Robert Debré in particular, following negociations between France and the United Nations. Its purpose was to furnish those international and national agencies dealing specifically with child care with training facilities and educational and informational tools in the field of child health and development, viewing children within their family and surroundings.

ICC soon turned essentially toward Third World children and devoted its activities to the training and education of personnel with social, educational and administrative responsabilities as well as medical and paramedical workers. The desire for greater efficiency has led it to work increasingly with trainers and to concentrate its efforts on the methodological and educational aspects of mother and child care programmes.

ICC is also engaged in an attempt to further study — and — action on some aspects of the life and health of children and their family, so as to contribute to practical improvement, particularly in the fields of growth, nutrition, planned parenthood, the control of transmissible and nutritional diseases, preschool and school education, the needs of disabled and underprivileged children, etc.

Over this period of more than 30 years, a large amount of documents on children and adolescents, mostly from the developing countries, has been accumulated. This international documentation has been classified and sorted out, and has been computerized since 1983 : a bibliographic data base (BIRD : « Base d'Informations Robert Debré ») may be consulted anywhere in the world, through international communications networks. ICC also publishes periodicals, educational documents and specialized bibliographic bulletins.

As for its legal status, the International Children's Centre is a foundation under french law of recognized public utility, administered by an executive board with broad international membership.

CHILDREN
IN THE TROPICS

REVIEW OF THE INTERNATIONAL CHILDREN'S CENTRE

CONTROLLING FERTILITY

□ FRANCE DONNAY

1991 - N° 193-194

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CONTROLLING FERTILITY

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INTRODUCTION

FRANCE DONNAY

Our intention, in this issue, is to present the most recent developments in fertility control. Following some definitions, indicative of the changes in scientific knowledge and concepts, which have gone from birth control to planned parenthood and finally, to the more all-encompassing notion of controlled fertility, the global demographic situation will be discussed. What is this situation ? Is action required, and why ? What are the factors that affect fertility ? What measures may be taken to control it at a national or community level, or by couples and individuals ?

The place of family planning programmes in the overall picture represented by these measures will be discussed, with reference to the still relevant debate on the respective effects of such programmes and of socioeconomic development.

Next, contraceptive methods will be described, with their advantages and shortcomings, their limits and benefits, with emphasis on the medical aspect, but also on the cultural significance and social and individual acceptability of different traditional and modern techniques. Spacing of births and/or limiting the number of children born to each woman have beneficial effects on family health, especially when family planning programmes are made an integral part of mother and child health services and of primary health care.

The organization of such programmes will be touched upon, with emphasis on the fact that family planning is a team project requiring coordinated training of the health agents involved. Several family planning programmes will be used to illustrate these points.

A chapter will be devoted to the delicate and extremely important problem of contraception for adolescent girls and young women. The role of men will also be discussed.

Last, some aspects of programme evaluation will be described, keeping in mind the fact that health professionals are motivated essentially when they, and the local communities, are involved in organizing and managing programmes for controlling fertility.

SOME DEFINITIONS

The population in the year 2000 or 2020

Projection based on reasonable postulates as to trends in fertility, mortality and migrations. The data are taken from official national projections or series published by WHO, the World Bank and the census bureau of the United States.

Population policy

Position taken officially by the government of a country.

Demographic transition	Transition from a situation in equilibrium, with high mortality and fertility, to another equilibrium, with low mortality and fertility.
Crude birth rate	$\frac{\text{number of live births in the year}}{\text{mean size of the population}} \times 1{,}000$
Crude death rate	$\frac{\text{number of deaths in the year}}{\text{mean size of the population}} \times 1{,}000$
Rate of natural increase (RNI)	Birth rate minus the death rate, expressed as a percentage.
Total fertility rate (TFR)	The average number of children a woman will bear assuming that current age-specific birth rates will remain constant throughout her child-bearing years.
Fertility regulation	All of the means implemented in attempts to submit fertility to human decisions.
Birth-spacing	Means used to maintain an optimal interval between two successive births, mainly in order to reduce maternal and infantile mortality and morbidity.
Family planning	All of the methods used to organize the arrival of children following the family's plans. This includes measures for the prevention and treatment of sterility and infertility as well as measures for the prevention and treatment of undesired pregnancies.
Contraception	All of the methods through which unplanned pregnancies may be avoided.
Contragestation	Technique resulting in the interruption of an undesired pregnancy.
Responsible parenthood	Attitude consisting of deciding how many children to have and when to have them.
Reproductive health	A woman's capacity to conceive, pursue her pregnancy and give birth in a medically and emotionally safe context ; for a couple, the ability to raise children who will survive and develop, to regulate its fertility and have a sex life freed of the fear of disease and of undesired pregnancies.
Rate of prevalence of contraception	Percentage of women aged 15 to 50, having sexual intercourse and using a contraceptive method (1).

(1) World population 1990. Washington : Population Reference Bureau, 1990.

THE DEMOGRAPHIC CHALLENGE

GLOBAL POPULATION TRENDS

The worldwide demographic situation has become a major concern in the last two decades. The figure of 5 billion individuals was reached in 1987. In 1990, the Earth was peopled by 5.3 billion human beings, and according to demographic projections, the global population will be somewhere between 10 and 15 billions at the end of the next century. The most optimistic forecasts predict a doubling of the population, followed by a stabilization around the 10 billion figure. This requires that by 2020 each woman have only two children, on the average : a most improbable figure, since it implies the use of an effective contraceptive method by at least 75 % of couples as early as the year 2000.

The forthcoming decade will be decisive in this respect. Indeed, it is between 1990 and 2000 that the greatest demographic expansion in human history will take place, irrespective of collective and individual attitudes. Why ? Because the number of young couples of child-bearing age is so high that the growth of the overall population will be the greatest ever, even if the number of births is limited, voluntarily or not. In ten years, in the year 2000, the curve of demographic expansion will reach its peak, and should then begin to slope downward (figure 1).

The decisions that will be taken in the coming years will therefore be capital, provided they are put into effect. In response to this demographic challenge, the gigantic global effort already undertaken to control fertility must be pursued.

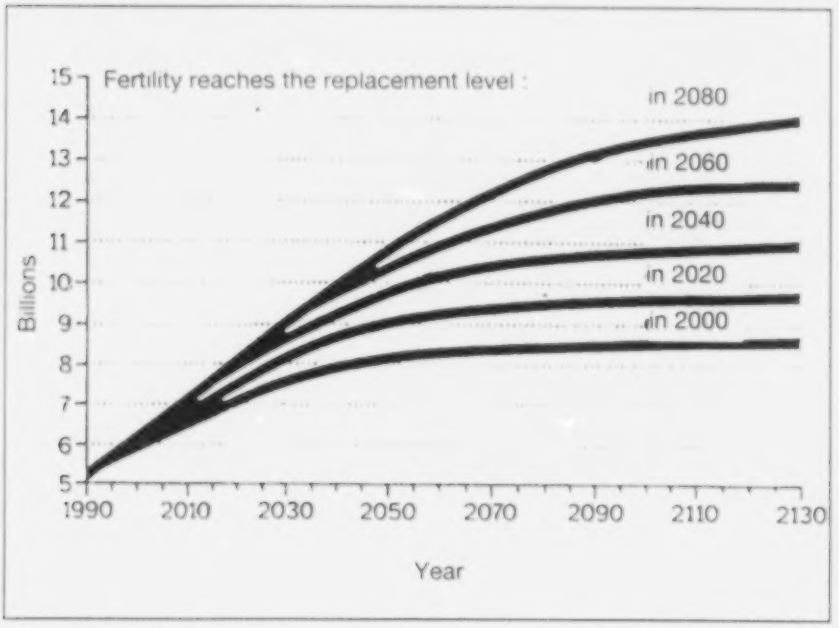

Figure 1 : Ultimate size of the world population depending on various hypotheses concerning fertility.

Source : World Population 1990. Washington : Population Reference Bureau, 1990.

One way of controlling fertility involves family planning programmes, which aim at making modern methods of birth control acceptable and accessible, and at encouraging the use of traditional methods. Are these actions necessary ? What are the problems raised by the global population explosion ? What are the main factors determining fertility ? What means, other than the implementation of these programmes, may effectively modify the demographic trend ? The present text will attempt to answer these questions succinctly.

The exponential growth in population will occur almost exclusively (94 %) in the developing countries. In 1990, the natural rate of growth, for the entire world, was 1.8 %. The rates are as follows for different parts of the world (figure 2 and table 1).

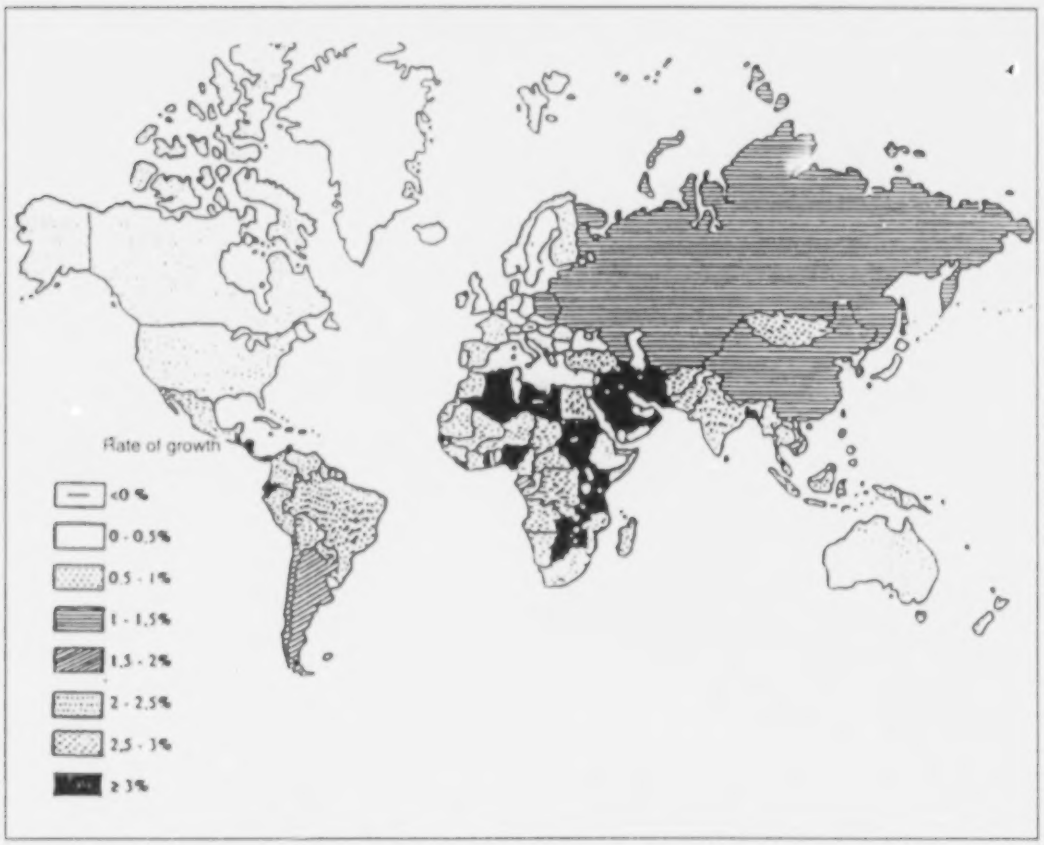

Figure 2 : National increase rates throughout the world in 1984.

Source : CHARBIT Y. Introduction to Population dynamics, Population education unit, UNESCO, Technical dossier n°4, 1989 : 12.

Table 1

RATES OF GROWTH AROUND THE WORLD

Developed countries	0.5 %
Developing countries	2.1 %
Developing countries minus China	2.4 %
North America	0.7 %
South America	2.1 %
Europe	0.3 %
Oceania	1.2 %
Asia	2.1 %
Africa	2.9 %

Source : Ibid. 1.

The increment will be greatest in subsaharian Africa and in the muslim world. As Y. Charbit clearly points out : "This phenomenon is mostly explained by the fact that these countries are now in the intermediate phase of the demographic transition. This transition may be summed up very simply. Several phases can be identified :

- the pre-transitional phase : the population increases slowly ; hence, if the birth rate is high, so is the death rate. Up to the 19th century, in Europe, famine caused by crop failure, wars and diseases struck those whose health conditions were the poorest and lacked effective medical treatment ;

- the transition phase as such has two stages. During the first, mortality decreases thanks to improved living conditions derived from the progress made in agriculture, medicine and public health. Since the birth rate remains high, the difference between the two curves becomes greater. In fact, at the beginning of the 19th century, European populations experienced strong growth. In the second stage, mortality continues to decrease and so does birth ; the gap closes, and the natural increase rate continues to decrease ;

- the post-transitional phase : in terms of process, birth and death rates balance out once again, but at a much lower level than before the transition. The population only grows slowly.

The pre-transitional phase is not evident anywhere : mortality everywhere has decreased. The beginning of transition, characterized by a sustained high fertility rate, can be observed in Africa and in most of the Arab world. In Latin America, South and South East Asia, fertility has begun to decrease, but the natural increase remains high. Finally, in China and the Caribbean, the phase has

been completed : the natural increase rate has slowed down. (It should be added that fertility has begun to decline quite recently in a growing number of African countries (Ghana, Senegal, Botswana, Zimbabwe, Kenya and even Sudan) - editor's note).

Can the transition model make it possible to interpret and extrapolate the demographic evolution of developing countries ? They have experienced far higher rates of population growth than those seen in Europe a century ago, and the possibilities of emigration are much more limited. Different, original solutions must therefore be found (figure 3).

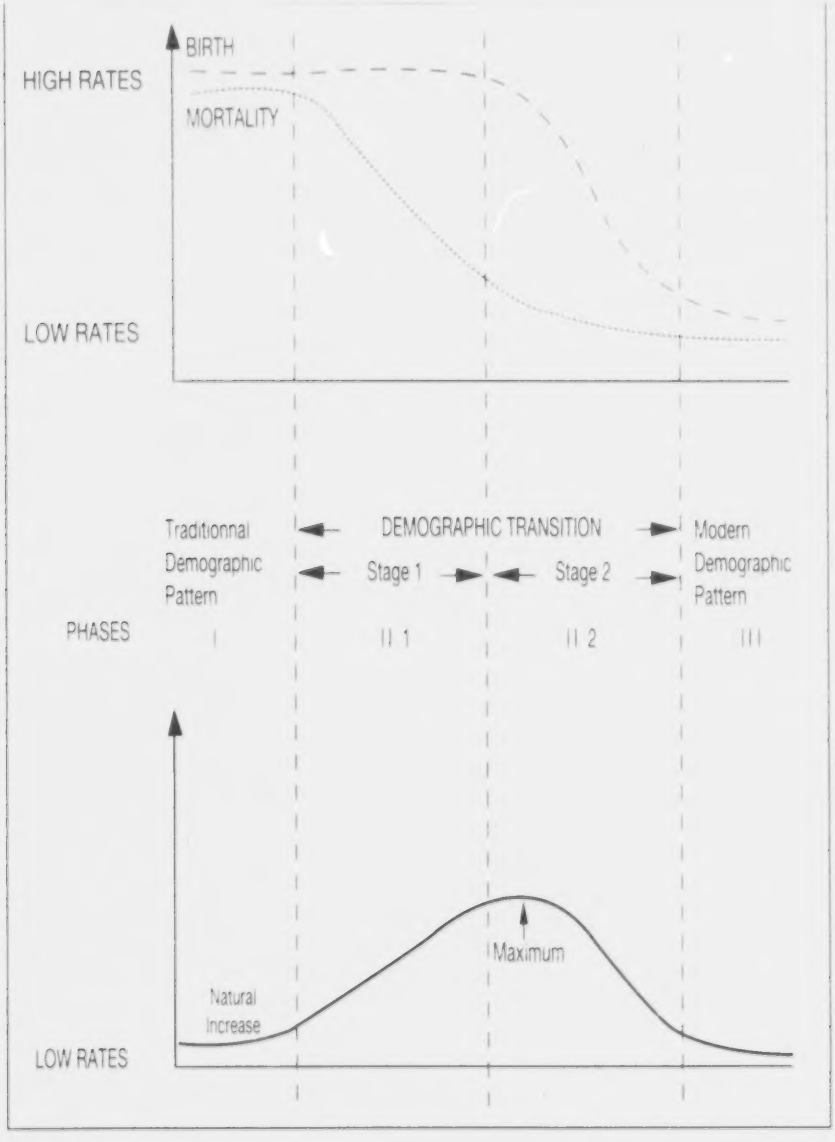

Figure 3 : Illustration of the demographic transition model.
Source : NOIN D. In : CHARBIT Y., op. cit. : 5.

Mortality declined in Europe during the 19th century because of the general economic, social and scientific progress. In developing countries, the death rate decrease was achieved through medical advances (vaccines, antibiotics, sulfa drugs, DDT) almost independently from social change. It is a recognized fact today that future progress must be accompanied by true economic and social development, mainly in terms of the availability of drinking water, hospital care and the conduction of systematic vaccination campaigns.

As far as the birth rate is concerned, demographers and sociologists have identified the changes that have brought about the decrease as being : a high level of education, lesser involvement of the family in production, decline of the large family and the emancipation of women resulting from their engagement in paid employement and other activities differing from housekeeping or child-bearing. It is believed that these changes have caused an increase in the cost of each child. When these children grow up, they contribute less and less to the family income and to supporting their parents during their old age. Thus, a change in production techniques among with a period of economic growth has given rise to a new pattern of fertility that focuses on the small family.

How much of this is true of developing countries ? Generally speaking, there is a correlation between economic development and decreased fertility... On the other hand, fertility remains high in some places for a number of socioeconomic reasons. The decision to have a big family is a rational one in (unmechanized) rural areas. The more workers there are in a family the better, regardless of whether they are small children. Since no social welfare system exists, grown children are a type of old age insurance for their parents. However, considering the infant mortality rate, 5 or 6 children must be born so that at least 2 or 3 will survive to fulfill this role. Finally, a big family can diversify its resources : a farmer facing a poor harvest can rely on what his son earns working in the city or abroad.

As these factors exert full pressure on individual behaviour, modernization cannot occur smoothly : it will begin to create a conflict between "modern" and "traditional" attitudes. For example, women will continue to have their first child soon after marriage, in order to respond to society's expectations : they will not use contraceptives until they have reached a certain age and have already had their wanted number of children" (2).

And yet, as we will see further down, illustrated by examples of programmes, the theory that development is a necessary preliminary to decreased fertility has recently undergone some change. Even in the least developed countries, and particularly in Africa and in South East Asia, there is an increasingly clearcut desire among both urban and rural inhabitants to space and to limit births (3).

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(2) Y. CHARBIT. Introduction to Population Dynamics. Paris : UNESCO, 1989 (Technical Dossier n° 4).

(3) Major fertility declines. Demographic and Health Surveys Newsletter 1991 ; 4, n° 1.

FACTORS DETERMINING FERTILITY

When population dynamics are studied, it is obvious that only four variables have a direct effect on the size of a population : births, deaths and inflow and outflow due to migrations. These variables in turn are determined by socioeconomic and cultural factors, on the one hand, and by medical factors on the other hand ; all of which are intricately interrelated.

Migrations

Let us first briefly describe the role of international and intranational migrations. Internal migrations connected with urbanization contribute to demographic growth. In urban areas, immigration adds to the natural excess of births over deaths and reinforces this trend, since migrants are generally young adults, whereas the rural population ages, because of the rural exodus. In the large cities of developing countries, then, growth rates are therefore often much higher than the national average. This dynamic also applies to international migrations, but these have less serious demographic consequences.

Birth rate

Births may be illustrated by the crude birth rate, but this does not represent a satisfactory indication of a population's fertility, and does not lend itself to accurate international comparisons.

Total fertility rate

The total fertility rate (TFR) is a better indicator : it shows the potential number of children which a woman aged 50 would have had if her reproductive behaviour had been the same as that of previous generations. The average number of children per woman is generally lower.

In comparison with developed countries, the TFR is twice as high in developing countries, but it should be emphasized that the latter do not form a homogeneous group. As Y. Charbit points out, Africa is clearly the opposite of Latin America ; the Caribbean region (except Haiti), has practically reached the level of temperate South America (Argentina, Chile, Uruguay and Paraguay), traditionally viewed as a developed area. In Asia, China contributes decisively to the low fertility rate in the region : if this giant is excluded, the TFR is no longer 3.7 but 4.6 children. Fertility is still high in south-west and southern Asia, which comprises both the arab countries and India and its neighbours. During the past thirty years, fertility rates have remained practically unchanged in Africa, whereas they have dropped in Latin America and eastern Asia.

Population dynamics also depends on mortality. Deaths are expressed by the gross annual mortality rate, but the life expectancy at birth reflects the health status of a population more accurately. In the present context, the infantile and juvenile mortality rates are the most important factors, since infantile mortality plays a decisive role in reproductive behaviour. Demographic expansion takes a heavy toll on women as well : maternal mortality connected with childbirth and abortion is still very high in many developing countries (4).

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(4) M.H. BOUVIER-COLLE, S. DORMONT, L. DESTANNE de BERNIS. Motherhood - mother's health. Children in the Tropics 1990 ; n° 187/188.

Table 2
TOTAL FERTILITY RATE IN 1985

Whole world	3.7
Developed countries	2.0
Developing countries	4.2
Africa	6.3
North Africa	6.0
West Africa	6.4
East Africa	6.8
Central Africa	6.1
South Africa	5.2
Asia	3.7
Southwest Asia	5.9
Central-south Asia	5.0
Southeast Asia	4.5
Eastern Asia	2.1
North America	1.8
Latin America	4.2
Caribbean	3.3
Tropical south America	4.2
Temperate south America	3.1
Central America	4.9
Europe	1.8
Northern Europe	1.8
Western Europe	1.6
Eastern Europe	2.1
Southern Europe	1.9
USSR	2.4
Oceania	2.7

Source : Ibid. 2.

For any analysis of trends in fertility, it is useful to distinguish between two types of variables : the environmental variables, which are of a socioeconomic and cultural nature (religion, housing, education) and are expressed through intermediate variables, which show the individual features of couples of child-bearing age. For instance, religion is active through the rules it sets for marriage and divorce, contraception and abortion (figure 4).

ENVIRONMENTAL VARIABLES

Urbanization
Employment

The three socioeconomic factors which decrease fertility are urbanization, women's employment and a higher educational level.

The link between educational level and fertility, found in Europe during the demographic transition, is now found in those develo-

ping countries such as Thailand or Costa Rica where the transition has begun, but in some regions such as the Middle East a break with an earlier situation seems to be the decisive factor ("culture shock", including in uneducated women, upon their arrival in a city, for instance).

Women's educational level

The effect of education is mediated by three intermediate variables: later age at marriage, decreased frequency of marriage, to a lesser extent, and increased or improved recourse to contraception. In the latter domain, educated women represent a pilot social group, so to speak, whose behaviour may serve as a spur for other women. Not only do they resort more to contraception, but they use more efficient methods more regularly and more consistently.

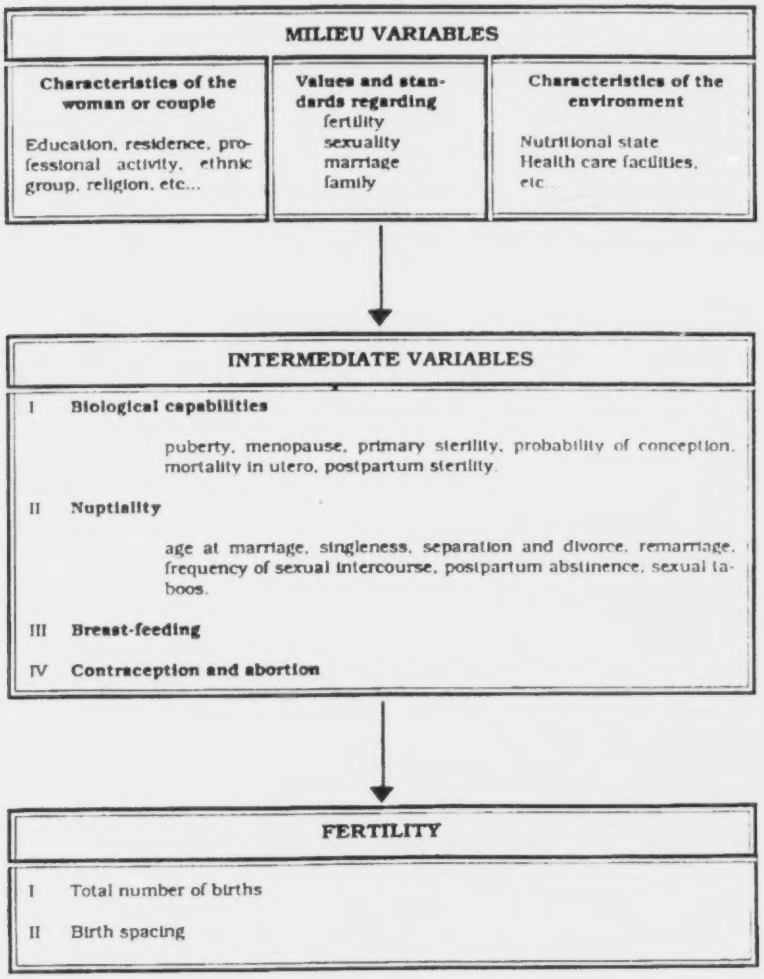
MILIEU VARIABLES
Characteristics of the woman or couple
Education, residence, professional activity, ethnic group, religion, etc...
Values and standards regarding
fertility
sexuality
marriage
family
Characteristics of the environment
Nutritional state
Health care facilities, etc...
INTERMEDIATE VARIABLES
I Biological capabilities
puberty, menopause, primary sterility, probability of conception, mortality in utero, postpartum sterility.
II Nuptiality
age at marriage, singleness, separation and divorce, remarriage, frequency of sexual intercourse, postpartum abstinence, sexual taboos.
III Breast-feeding
IV Contraception and abortion
FERTILITY
I Total number of births
II Birth spacing

Figure 4 : Fertility factors.
Source : Ibid. 2.

In many African countries, however, the percentage of couples who are motivated to use effective traditional or modern contraceptive methods is far too low to actually affect the population dynamics, as shown by the example of Rwanda. Furthermore, certain factors may have the opposite effect : in Nigeria, for instance, the most educated women presently have more children than the others, because they no longer resort to traditional practices which reduce fertility; that is, to postpartum abstinence and prolonged breast-feeding.

INTERMEDIATE VARIABLES

Nuptiality
Contraception
Abortion

These include the physiological aspects of reproduction, nuptiality, contraception and abortion.

Between menarche (occurrence of the first menstrual period, at average age 13-14), and menopause (no menstrual cycle for at least one year, age 48 to 52), a woman has a certain number of menstrual cycles, during which ovulation occurs, generally between the 10th and the 14th day. Some cycles are anovulatory, especially during the first years after menarche (post-pubertal period) and those preceding menopause (pre-menopausal period).

During an ovulatory cycle, the probability of conception is 0.20, or 20 %, or again, one chance out of five. It varies with age, with a peak toward age 25.

The spontaneous miscarriage rate is 15 %. Miscarriages are mostly (80 %) due to genetic anomalies in the product of conception. The other causes are mechanical and hormonal.

Post partum amenorrhoea, which is the sign of temporary infertility, varies with the duration of breast-feeding. Intensive (many feeds per day) and prolonged breast-feeding results in an increase in prolactin, which causes anovulation.

Theoretically, a woman who begins her sexual life at age 15, and who only uses breast-feeding as a (natural) means of contraception, will have between 15 and 18 pregnancies in the course of her reproductive life (ages 15 to 49).

In a given population, 5 % of women suffer from primary sterility (that is, they have never been pregnant) and 15 % of them from secondary sterility (they have already had one or several pregnancies, which ended in a miscarriage or delivery). If the male factor, which is involved in 50 % of infertilities, is included, the result is that one couple out of five within a given population will have difficulties in conceiving. This percentage is higher in some African countries, where the rapid extension of sexually transmitted diseases (STD) has resulted in the multiplication of cases of post-infectious sterility. The fight against male and female infertility is an integral part of family planning or "reproductive health" programmes (5).

(5) G. TAPINOS, Eléments de Démographie, analyse, déterminants socio-economiques et histoire des populations, Paris : Armand Collin, 1985.

Succinctly, at the national scale, control of fertility involves the implementation of social, economic, political, legal and medical measures :

- laws regulating nuptiality (minimum age at marriage, a particularly decisive measure, polygamy, divorce), contraception and abortion ;

- regulation of migratory flows ;

- measures designed to improve the health status of the population, as reflected by the mortality rates (annual number of deaths, infantile and juvenile mortality) ;

- factors determining the birth rate, or annual number of births, discussed below.

A comparison of the number of births with the number of deaths shows the natural growth of the population (in %) and the time required for that population to double (in years).

In a given social group, the birth rate is determined by a number of elements :

- what fertility represents socially (authority within the group), culturally (religion), economically (rural setting) ;

- the physiological factors involved in reproduction ;

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- sexual habits (premarital intercourse, post partum abstinence) ;

- measures taken at the national level, or at the community, family or individual level, to space births and/or limit their number.

This is expressed in terms of number of children per woman (Total Fertility Rate) and of the type of family (early pregnancies, immediately after marriage, in response to community expectations, then a long period of exposure to contraception, or, as in the western world, late pregnancies, frequent premarital pregnancies, spaced births...).

HOW TO CONTROL FERTILITY

If the natural rate of growth of a population is 3 %, this means that the population will double in 23 years !

Demographers have attempted to evaluate the economic, educational and health-related consequences of this situation. The most optimistic people recognize that during the next century it will be quite difficult to adjust resources (work-food-schooling-health) to the growth of the population and especially of the youthful population : in the year 2000, 42 % of the world population will be under the age of 25. In fact, the rapid rise in the world population results in increased poverty, and difficulties in everyday life mostly affect the health of women and children.

Demographic policy

By now, almost all governments have adopted a demographic policy usually aimed at limiting this increment. Certain countries such as Rumania have experimented with pronatalist measures, relatively unsuccessfully. At the time of the world population

conference (Bucarest, 1974), only Kenya and Ghana, in Africa, had adopted measures of this type. At the Mexico conference, in 1984, however, most African countries supported family planning programmes. The latter play a major role in Asia and Latin America, where 75 % of couples wish to use a contraceptive method. Interest is more recent and more limited in Africa, but it is now beginning to produce some effects.

Government policies are still insufficiently efficacious, however, given the extent of the problem, despite the fact that some non-governmental organizations were already aware of it in 1960. In Europe, the demographic transition took place with the help of traditional methods (coitus interruptus, termination of pregnancy in case of failure) for two main reasons : first, the lesser proportions taken by the problem, as compared to the present situation in developing countries, and secondly, improvement in the economic situation and in education and health systems, during the same period.

Estimations of the global prevalence of contraception (percentage of women of child-bearing age, sexually active, using a contraceptive method) are performed at regular intervals. Within a same region, there may be considerable inter-country differences. To take the example of the most recent trends : during the last fifteen years, the fertility of women under age 34 has decreased, especially in Asia, Latin America and North Africa, but also in Subsaharian Africa (6).

Socioeconomic development

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Measures aimed at socioeconomic development and family planning programmes act synergetically, and demographic studies in some countries have shown that the declining total fertility rate, or reduced number of children to which each woman gave birth in her entire reproductive life, may be attributed to socioeconomic changes, for 60 %, and to family planning programmes for 40 %.

Family patterns, as reconstituted by ethno-sociologists, vary from one society to another, and depend for a large part on women's educational level and place on the labour market. These patterns greatly affect the acceptability of different family planning techniques, and show which of these may be encouraged within a given population, without neglecting the other methods available.

Some governments have dictated coercitive measures to regulate fertility ("birth control"), which are often effective, as in China and to a lesser extent in India, but which generate hostility toward fertility regulation in general among people, including health agents.

At present, a worldwide network of international agencies (United Nations Fund for Population Activities/UNFPA, world Bank) and of nongovernmental agencies (International Planned Parenthood Federation/IPPF, Ford Foundation, Population Council, ICC, etc) collects and analyses demographic data, provides assistance to governments, participates in the provision of information for the population, and for health agents in particular.

(6) Ibid. 3.

Most governments encourage the implementation of programmes that take cultural factors into account : they stress the fact that spacing of births has positive effects on the health of both women and children, and recommend a series of measures for fertility regulation, including the prevention and treatment of infertility.

The ethical and religious rules governing sterilization of men and women, as well as abortion, are also essential, even more so than any laws on these issues.

Contraceptive methods

A broad range of reliable contraceptive methods is available at present, but their diffusion still encounters many obstacles. Contraceptive methods used to be and still are viewed with great suspicion, much more so than other medical treatments whose effects are far less dependable. This is mostly because of what they signify, in terms of morals - that is, the individual's right to freely determine his or her fertility and descendance, as opposed to submitting to "fate", which is to say to social and religious prescriptions - rather than to their actual effects on the physiology of reproduction.

There are also economic restrictions that affect the production of contraceptives : it takes 25 to 30 years to develop a new contraceptive technique, test its safety, first on animals then during carefully controlled clinical trials, make sure it is effective and ensure its production. This long process costs between 50 and 100 million dollars, and funds for research are insufficient. For many years thereafter, there is an ongoing monitoring of long-term risks and benefits of the method proposed.

For physiological reasons, methods for women are easier to develop. The social role of women has led them to take almost complete responsibility for contraception anyway. Programmes are increasingly aimed at men, however, as heads of family, and also because methods for men have some specific advantages : the condom is the only effective way of combating STD, and vasectomy or male sterilization, is a simple, harmless and inexpensive medical act. The promotion of methods for men are now receiving increased attention, as is research on easier to use and culturally more acceptable methods for women.

Legal and illegal abortions performed under poor medical conditions are responsible for many deaths among pregnant women. They also cause much illness, with a percentage of secondary sterility as high as 25 to 30 % in some countries, in contrast with 10 % in those countries where modern methods of contraception are instrumental in avoiding recourse to abortion in many cases, and where the latter is properly performed.

Control of fertility is not only a demographic problem, but also and above all an essential element in the promotion of health for women and children, and the result of an education appropriate to the needs of the community (7).

(7) Reproductive health and population : a foundation strategy for the 1990's. New York : Ford Foundation, 1990.

FAMILY PLANNING PROGRAMMES

INFLUENCE OF FAMILY PLANNING PROGRAMMES ON FERTILITY

In a number of developing countries, family planning programmes have been instrumental in lowering fertility, particularly so when energetic programmes received support from the government or from large nongovernmental agencies within a positive social and economic context. The synergy between these different factors potentializes and accelerates accomplishments.

Furthermore, family planning programmes have modified fertility even in relatively poor countries. They have helped to slow down population growth, even in those cases where other factors such as the decline in mortality rates or the increased number of young couples of child-bearing age worked in the opposite direction, intensifying population growth.

The first family planning programmes implemented toward the 1960's were intent not only on improving family health but on reducing demographic growth, the rapidity of which hindered economic development. Toward 1974, when the Bucarest conference was held, certain experts asserted that fertility would not drop unless social and economic development was intensified. Ten years later, findings have shown that family planning programmes were responsible for about 40 % of the control of population growth, alongside of other factors, be they social (nuptiality, age at marriage, polygamy) or economic.

In certain countries, fertility had begun to decline before national programmes went into action, and the movement gained momentum thereafter. In others, the drop began and continued following their implementation. 19

Asian family planning programmes were the first to be undertaken, and China, Hong Kong, India, Indonesia, Singapore, South Korea, Taiwan and Thailand witnessed 25 to 60 % drops in their crude birth rate over a 20-year period. In Mexico, birth rates have also decreased much more rapidly since the government set up a family planning programme.

Programmes in Tunisia, Egypt and the Islands of Mauritius and the Reunion have hastened the drop in fertility (8). However, with the exception of these countries and of certain Central African countries which suffer from infertility, Africa is a relatively homogeneous continent, with a high level of fertility, despite sometimes extremely deep internal cultural differences. The rate of marriage, which is both early (women marry young) and intense (almost all women marry) plays a decisive role.

Very high rates of infantile and juvenile mortality make high fertility necessary, not only for the collective survival of the family and ethnic group, but also for economic survival, since children's labour represents a non-negligeable contribution. As a result, fertility is

(8) L'influence des programmes de planning familial sur la fécondité. Popul. Rep. (J) 1985 : n° 29.

highly valued and sterility disapproved. Marriage plays an extremely important sociological role, since it sets up a whole system of alliances between clans. These two variables in nuptiality probably have a far greater influence on fertility than polygamy. Last, breast-feeding and post partum abstinence are the two main variables contributing to the reduction of fertility in the absence of "artificial" contraception. Breast-feeding, the only natural contraceptive method, makes it possible to space births, since post partum abstinence is generally only respected during much shorter periods. Urbanization and the adoption of western models have led to a decreased duration of breast-feeding, and city-dwelling women are seen to experience shorter interbirth intervals and an increased fertility index (9).

Fertility also remains high in Bangladesh, Pakistan, Iran, Afghanistan and Nepal ; no significant drop in fertility is expected to occur there in the coming decade (9). By 1985, the programmes set up in Pakistan and in Nepal, as in Kenya, had hardly influenced the prevalence of contraception and fertility. The underprivileged socioeconomic setting, the very low per capita income, the pressure of the islamic religion favouring women's having sons (with no access to modern techniques for early gender detection in the embryo, or authorization to make use of that knowledge), the limited storage and transportation facilities, are so many negative factors. The situation in Kenya has changed slightly at present, although the AIDS epidemic has not played a decisive role in this respect. Conversely, there is no indication whatsoever of a trend toward a reduction in fertility in Pakistan (10).

The results of family planning programmes are better, then, when they are properly managed and receive solid financial and technical support from governmental or other agencies.

Organization of programmes

An analysis of achievements in a number of countries has been used to establish criteria for the effectiveness of fertility control programmes (11). They usually conform to a simple equation : the less favourable the sociocultural and economic environment, the more "energetic" the programme must be. Attention, energetic does not mean "coercitive" ! An energetic programme is one in which activities and approaches are diversified :

Diversity of activities

- broadest possible information of the public, using a variety of means (television, radio, press) and of places (schools, work...) ;

- integration in different health services (MCH, immunization campaigns, oral rehydration campaigns) ;

- intensification of the post partum (or post abortum) programme ;

- diversification and training of health agents who advise on and prescribe methods ;

- sale of contraceptives in commercial circuits (clinics, pharmacies, groceries) to complete the usual sales network on the local markets ;

(9) *Ibid. 2.*

(10) *Ibid. 3.*

(11) *Ibid. 8*

- community-based distribution ; that is, within limited social groups such as villages or neighbourhoods ;

- frequent, objective evaluation, taking into account not only the number - generally optimistic - of first acceptations, but also the follow-up rate. These findings, communicated to the health agents attached to the programme, provide a better approach to reality, so that errors may be corrected and services improved (12).

In 1982, Mauldin and Lapham determined a scale of intensity for programmes (figure 5), which may be used to correlate the more or less intense presence of certain essential criteria with the results attained. This scale is valuable in that it puts together the fundamental aspects of a fertility control programme, at a national or regional level. Community, family or even individual approaches are presently preferred to ambitious national programmes (13).

Like the methods themselves, family planning programmes must comply with a number of requirements. Fifteen criteria are listed below :

Programme requirements

- services must be located near clients : distances to be travelled must be reduced, and in rural areas services set up in villages, or visits made by mobile teams. Access of rural populations to family planning (FP) services is one of the main problems ;

- services must be of high quality, provided by motivated, receptive personnel whose training (especially in ability to dialogue, and in health education) is regularly refreshed ;

- FP work is a team enterprise requiring appropriate distribution of tasks among the different agents (physicians, midwives, nurses, health educators) in accordance with the local situation : for instance, IUDs are usually inserted and checked by midwives ;

- FP may be an ungratifying job, the achievements of which are not always immediately visible. It should be respected and properly remunerated, in consideration of the cost of a confinement or of an abortion, for instance ;

- the most effective programmes are those which offer all available methods, and not just one or two, judged most appropriate to the local context. Even if women or couples actually restrict themselves to these two methods, in practice, the choice is consistently in their hands, which makes for greater acceptability and a better follow-up rate ;

- acceptation of a method is one thing, while continued use of it is another. Information and follow-up by health workers, and paramedics in particular, are capital tasks, on which the effectiveness of a programme rests ;

- postpartum and postabortum periods are the most favourable ones ;

(12) J. ROSS, M. RICH, J. MOLZAN. Management strategies for family planning programs. New York : Center for Population and Family Health/School of Public Health, 1989.

(13) Ibid. 8.

- programmes are mostly aimed at women aged 20 to 34, but younger and older women should receive appropriate information as well. Methods vary with the client's age, and messages should be diversified so as to correspond to different age groups, while maintaining on-going information but taking into account the changes that may occur in couples' living conditions during their fertile period ;

- least educated and poorest women form an at-risk group ;

- some degree of failure is unavoidable, even with theoretically highly effective methods. Health agents must be aware of this, accept it, and continue to inform people ;

- information-education-communication (IEC) campaigns play a major role but in no way replace direct contact. If more than 25 %

GENERAL GUIDELINES AND CREATION OF A FAVOURABLE CONTEXT

- * 1. Official government policy on fertility/family planning and population growth
- * 2. Declarations by government officials in favour of them
- 3. Level of government in charge of family planning programme
- 4. Legal minimum age for marriage, at least 18 for women ; strictness of application
- * 5. Laws authorizing importing of contraceptives ; production within the country
- 6. Advertising for contraceptives in the media is legal
- 7. Participation of numerous ministries and governmental departments
- * 8. Percentage of the overall programme budget derived from sources within the country

SERVICES AND RELATED ACTIVITIES

- 9. Participation of private agencies
- 10. Employment of public servants to implement the programme ; responsibility at all levels
- 11. Community-based distribution
- 12. Subsidized sales programmes
- *13. Postpartum family planning programmes
- *14. Home visits by family planning agents
- 15. Appropriate structure and managerial personnel
- *16. Satisfactory training programmes
- 17. Degree to which staff performs assigned duties
- *18. Satisfactory logistics and transportation
- 19. Proper supervision
- *20. Use of mass media
- 21. Encouragement and/or discouragement

RECORDS AND EVALUATION

- *22. Collection, communication and control of information recorded on clinic files
- *23. Evaluation
- *24. Use of outcome of evaluation by management to improve the programme

AVAILABILITY AND ACCESSIBILITY OF FERTILITY REGULATION METHODS

- **25. Male sterilization
- **26. Female sterilization
- ***27. Oral contraceptives (or injectables, if preferred)
- ***28. Condoms (or other barrier method, if preferred)
- ***29. IUD
- *30. Danger-free induced abortion

* Mentioned in the 1972 scale of programme intensity.

** Points 25 and 26 are merged in the 1972 scale.

*** Two separate points in the 1972 scale.

A detailed version of this scale was sent to family planning experts in each country - programme managers, representatives of donor agencies and independent observers. These experts rated each point from zero to four. The mean of all ratings was calculated, to show the final score for each country.

Figure 5 : Scale of intensity of programmes, used by Mauldin and Lapharm in 1982.

Based on : Ibid. 8.

of the budget is devoted to IEC, and training of agents for exchanges with clients is neglected, the effectiveness of the programme declines. However, messages should be circulated continually :

- imagination and individual initiative in the conception of vehicles of information are the best guarantee of an effective, motivated personnel ;

- services should be accessible (have suitable hours), pleasant and inexpensive, and the facilities set up so that women's intimacy is respected (for gynaecological examinations, insertion of IUDs) along with their need for communication (waiting room, informative sessions). While all acceptors should be given a gynaecological examination once yearly, on the average, irrespective of the method selected, on the other hand, routine blood checks are unnecessary (even prior to hormonal contraception) and costly. This is an obstacle that should be eliminated ; blood tests should be reserved for those patients with specific risks ;

- the unlimited availability of contraceptives, with no shortages, is clearly a fundamental factor, probably the most important one in the success of a programme. Storage and transportation (vehicles) must be carefully organized and constantly monitored ;

- this supply is more reliable when several sources are drawn upon, and when products are not excessively costly. There may be several circuits for the delivery of contraceptives : medical circuits (conventional programmes axed around clinics), commercial circuits (pharmacies, grocery shops, markets), community programmes in which members of the community who have participated in the establishment of the programme conduct information campaigns and deliver contraceptives (14) (15).

On the island of Bali, Indonesia, for example, traditional village councils run family planning programmes, sometimes in combination with other development actions such as crafts cooperatives. In countries as contrasting as Colombia, Thailand, Brazil and Egypt, communities participate actively in family planning programmes, and have established more flexible structures, more attentive to the needs of the population, alongside of clinic programmes (16).

The role of men

Studies show that some men are willing to share responsibility for family planning. In Europe, traditional methods were for men, and it was mostly those that were instrumental in the demographic transition. Beginning in the 1960's, with the development of hor-

(14) Ibid. 12.

(15) D. PIEROTTI, A. JOURDAIN, P. LECORPS. Manuel de régulation des naissances en Afrique. 2nd ED. Rennes : ENSP, 1970.

(16) D. MAINE, J. REVSON. Family planning : Its Impact on the Health of Women and Children. New York : Center for Population and Public Health/School of Public Health, 1981.

monal contraception and of better intrauterine devices, attitudes changed completely, and women gained greater freedom along with more responsibility.

In other cultures, postpartum abstinence and prolonged breast-feeding conferred the main role in the regulation of fertility on women. In some regions bordering on the Mediterranean, men express their fear of losing some of their power, and of having their wives experience greater sexual freedom if they have access to modern means of contraception. Simultaneously, difficulties in supporting their family have led increasing numbers of these men to express a desire to limit the number of children. They are also concerned about the health of their wives and children (17).

Those modern methods that they find acceptable are condoms and vasectomy. Women often have misconceptions about their husband's projects for progeny, and many couples never broach the subject of contraception and of the number of children they wish to have together (18).

Too many family planning programmes have neglected men, although they have been sollicited to participate in mother and child health action. As one author points out, it is probably a lack of information and the absence of services catering to men, rather than a lack of interest on their behalf, which has prevented many men from actively participating in family planning (19).

The situation is changing, at present, and projects directed at men are being implemented : they range from the school for husbands in Nouakchott, Mauritania (D. Pierotti) to organized discussion groups in Zaïre (20) and include the involvement of "baby fathers" in one Jamaican project (21). Communication within couples is encouraged, and some men (village heads, medicine men, religious leaders) are invited to participate in decisions pertaining to the organization of family planning programmes.

Increasing interest is being shown in the integration of education for AIDS prevention in family planning programmes. In May 1990, recommendations on this subject were made public by the World Health Organization (WHO), in collaboration with a number of international experts including Family Health International (22).

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(17) M. BERNHART, M. UDDIN. Islam and family planning acceptance in Bangladesh. Stud. Fam. Plann. 1009 ; 21, n° 5 : 287-292.

(18) S. JEJEEBHOY, S. KULKARNI. Reproductive motivation : a comparison of wives and husbands in Maharashtra, India. Stud. Fam. Plann. 1989 ; 20, n° 5 : 264-272.

(19) La consultation fait toute la différence. Popul. Rep. (J) 1987 ; n° 35 ; 22-23.

(20) Final report, Zaire family planning operations research project, New Orleans : School of Public Health and Tropical Medicine, 1990.

(21) P. McNEIL, F. OLAFSON, D. POWELL, J. JACKSON. The women's center in Jamaica : an innovative project for adolescent mothers. Stud. Fam. Plann.1983 ; 14, n° 5 : 143-150.

(22) WHO. AIDS Prevention : Guidelines for MCH/FP program managers. 1. AIDS and family planning, Geneva : WHO/Maternal and Child Health, 1990.

Health professionals involved in MCH and FP, be they traditional practitioners or not, are often the only people to see women in consultations in developing countries. They are directly affected by all of the problems connected with reproductive health, and especially with the AIDS epidemic. The organization of FP consultations to cope with the AIDS problem has been suggested (23).

Another major aspect of programmes touches on the training of future physicians, nurses and midwives. Curricula devoted to MCH, FP and the prevention of STD and of infertility may be developed in an integrated fashion. It is also important for the curriculum to include training in programme management, evaluation and the creation of pilot regions (24) (25).

BENEFICIAL EFFECTS ON FAMILY HEALTH

Mothers' health

Over and beyond its contribution to controlling the explosive population growth, control of fertility has positive effects on family health, which health professionals may in fact view as the most important of all.

Around the world, 500,000 women die each year as a result of a pregnancy, carried through to term or not : 25 to 50 % of these deaths occur following induced abortion performed under unsatisfactory conditions (26). The maternal mortality rate in developing countries ranges from 50 to 1,500 per 100,000 births, depending on the country and the region, whereas it is somewhere around 10 per 100,000 in most developed countries.

Table 3 compares the risks of death connected with delivery, legal and illegal abortion and the use of contraception. It clearly shows that it is more dangerous to be pregnant and to give birth (despite the natural, physiological nature of these events) than to interrupt one's pregnancy under proper conditions, or better still, than to use a contraceptive method. The condom, in combination with termination of pregnancy in case of failure, is the statistically safest contraceptive method.

Table 3

MATERNAL MORTALITY

Childbirth (1)	. developing countries . developed countries	10 - 1,500 10 - 15
Abortions (2)	. legal . illegal	3 50 - 150
Oral contraception (2)	. non-smoker . smoker	0.5 - 5 2 - 30
IUD (2)		1 - 1.5
Female sterilization (2)		5

(1) per 100,000 live births
(2) per 100,000 women annually
Source : Ibid. 16

(23) Ibid. 19.
(24) Ibid. 15.
(25) La planification familiale et la formation des infirmières et des sages-femmes. Cah. Santé Publique 1974 ; 53.
(26) Ibid. 4.

It is well proved that risks linked to childbirth are highest at both ends of reproductive life, and beyond a certain number of pregnancies : deliveries before age 20 and after age 35, more than 4 deliveries, interbirth intervals of less than 2 years (27) (28). Ideally, women should have four children at most, at intervals of at least 2 years, between the ages of 20 and 34.

Traditional methods of fertility regulation - that is, breast-feeding and postpartum abstinence, are indicative of the very ancient awareness of the beneficial effect of spaced births on the health of the previous child (owing to late weaning) and of the next child, with the possibility for the mother to reconstitute her reserves of iron and of other essential elements (29).

Interbirth intervals

Modern family planning methods may also be used, more effectively, to optimize interbirth intervals rather than to reduce their number. The global fertility survey has shown that a great many women in different developing countries already control their fertility for this reason.

Family planning also decreases the number of at-risk pregnancies among adolescents and multiparas over 35 years old, as well as those occurring after a caesarean section or gynaecological surgery, or in a woman with heart disease or an infectious condition.

The beneficial effects on health of each FP method are specific, and differ from the contraceptive effect itself. There are also contraindications, and side effects, which are infrequent but occasionally serious. However, it has been proved that the risks connected with every one of these methods are statistically lower than the risk attendant on pregnancy and childbirth. Only with oral contraception in a woman smoker over 35 years old is the risk higher, but these studies were conducted in developed countries (USA, Great Britain), where childbirth-related mortality is very low (30) (31) (figure 6).

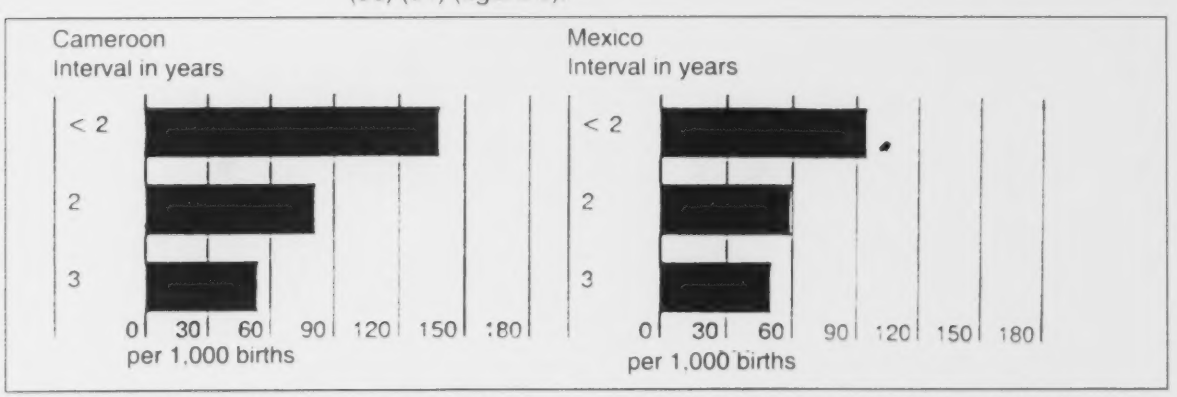


Figure 6 : Death rate (number of probable deaths one year after delivery per 1,000 live births) for infants born at the end of an interval under 2 years, 2 years and 3 years.
Source : MAINE D., MC NAMARA R. Espacement des naissances et survie des enfants. New York. Center for Population and Family Health, 1985 : 26.

(27) Ibid. 16.

(28) D. SERFATY et al. La contraception. Paris : Doin, 1986.

(29) Ibid. 4.

(30) Ibid. 8.

(31) Ibid. 28.

A programme for controlling fertility on a local or national scale has rapid, considerable effects on family and community health. Through fertility control programmes, which may be run concomitantly with immunization or oral rehydration programmes, for instance, women and children receive far better protection (32).

COST AND FINANCING OF PROGRAMMES

In 1990, governments and/or nongovernmental associations everywhere spent somewhere around 700 million dollars on family planning programmes.

A 1987 survey of about one hundred developing countries showed the existence of four main patterns of programme financing :

- the programme may be financed by the government, occasionally assisted by associations : financial benefits or gifts in kind are distributed to acceptors, professionals or recruiters, sometimes at all levels. This system has mostly been applied during sterilization campaigns, and the sums allotted varied enormously, ranging from real financial incentive to minimal compensation (transportation expenses, work incapacitation) ;

- incentives are offered to local communities that organize family planning services, rather than to individuals ;

- at the other extreme, it is the client who pays for all contraceptives and services provided, be they public, semi-public or private ;

- governmental measures aimed at discouraging births : they may be positive (indemnities following sterilization or acceptation of another method) or negative (penalization in case of too many pregnancies, reduced maternity leaves, access to daycare and payment of benefits) (33). These measures encourage small families and sometimes generate conflicts between the government and the population, as in China for instance.

Certain programmes are coherent and distribute all methods free of charge, whereas others favour certain methods such as sterilization, which is less expensive because it is definitive. Further, acceptors' participation, even slight, in the cost of contraceptives, does not seem to affect demand (34), and may even encourage it, since "if it's free it probably is not good".

Health agents may be paid wages or paid by the act ; occasionally the two systems coexist, which has some advantages (possible promotion, motivation) and some disadvantages (too many visits, overconsumption, pay for termination of pregnancies).

There is great variety and a degree of confusion around the means of financing and the costs of programmes, which should be eva-

(32) M. POTTS, S. THAPA. Child survival : the role of family planning. Family Health International 1990 : 90, n° 37.

(33) J. ROSS and S. ISAACS. Costs, payments and incentives in family planning programs : a review for developing countries. Stud. Fam. Plann. 1988 ; 19, n° 5 : 270-283.

(34) M. LEWIS. Do contraceptive prices affect demand ? Stud. Fam. Plann. 1986 ; 17, n° 3 : 126-135.

luated with accurate reference to local situations and with the inclusion of different aspects such as facilities (installation, maintenance), medical equipment (purchasing, maintenance, sterilization), written and audiovisual informative material, vehicles, wages and any other forms of payment and the contraceptives themselves (local production, import, quality control, storage, refrigeration, transportation, sterilization, supply renewal and distribution). Expenses entailed by the on-going training of professionals, of traditional practitioners and occasionally of volunteers, as well as by the management and evaluation of the programme, should not be overlooked.

Who can shoulder such expenses ? Demand for family planning has risen, but with today's economic crises budget allocations for health and education have declined. The more or less extensive financial participation of acceptors and the contributions of private investments may result in the sharing of costs (35). Given the extent of the problem, governments intervene, by putting family planning on their health budget, which tends to expand. Users often consent to pay part of the cost, but again, the sums demanded of them should take their financial situation into account, so as not to deprive the most underprivileged of these services.

Last, programmes receive assistance from governmental organizations (USAID, Nordic Council,...), from the United Nations (UNFAD, WHO, UNICEF,...) and from some dynamic nongovernmental associations (IPPF, Population Council, Ford Foundation, Family Health International,...). The increasingly effective cooperation between all of these agencies, governments and local initiatives, shows the concern of the international community with developing family planning and global solidarity in an attempt to cope with these population issues.

(35) *Ibid. 33.*

CONTRACEPTIVE METHODS

GENERAL REMARKS

Methods for regulating fertility may be divided into traditional and modern methods.

Traditional methods are usually methods for men : coitus interruptus, periodic abstinence, potions, condoms, all have been in use since ancient times, at the least. To these we must add, for women, traditional spermicides (stones, sponges or plants), some beverages and breast-feeding, which is a natural - that is, involuntary - method. Historical references also mention the existence of intrauterine devices in ancient Egypt and of oiled paper diaphragms in Japan.

So-called modern methods were developed mostly at the end of the 19th century and during the 20th century : they are generally for women, and include intrauterine devices (which have been in existence since ancient times, but the modern version of which - constantly being improved - is in use on a large scale since the 1920's), oral and parenteral hormonal methods, developed between 1955 and 1965, diaphragms and cervical caps, made of rubber since the late 19th century. Last, in the 1980's, medical research has resulted in the availability of new, better tolerated hormonal substances, and of more effective spermicides. The comfort and quality of condoms have been improved, contragestation has been developed (RU 486). Techniques used for sterilization have changed, and further advances are in store.

29

Table 4

CONTRACEPTIVE METHODS

Breast-feeding	Post-coital contraception
Coitus interruptus	• IUD
Hormonal contraception	• morning-afterpill
• pills	Contragestion
• intramuscular injections	• RU 486
• implants	• 486 + prostaglandins
Intrauterine devices	• LHRH
Barrier devices	Female sterilization
• condoms	• ligation
• diaphragms	• clips-rings
• cervical caps	• silastic
Chemical methods	• laser
• spermicides	Male sterilization
• vaginal sponges	• vasectomy
Periodic abstinence	
• rhythm or Ogino	
• temperature	
• cervical mucus or Billings method	
• sympto-thermal method	

These modern methods, mostly for women, are called medical methods since their use requires an examination and/or prescription by a health agent (doctor, midwife, nurse) trained in family planning techniques. They are far more effective than traditional methods. At the crossroads between traditional and modern methods are those that require self-observation or periodic abstinence. They were scientifically investigated in the 1920's (Ogino : 1928, Knauss : 1930). They are moderately effective and have been improved over the last 20 years. Table 5 compares the theoretical effectiveness of these different methods to their actual effectiveness. The figures given are means calculated from the outcomes of a number of studies.

Table 5

EFFECTIVENESS OF METHODS (% years/women)

METHODS	THEORETICAL E.	PRACTICAL E.
None	85	85
Pill	0.5	2-5
IUDs	2	2-5
Injections-implants	0.5	5
Diaphragm-cap	5-10	20
Condoms	5-10	10
Spermicides	10	20
Periodic abstinence	5	20
Coitus interruptus	20	25
Washing	?	40
Sterilization . female . male	 0.5 0.5	 0.05 0.15

How is the effectiveness of a method measured ? It is expressed by Pearl's Index (PI) ; that is, by the number of pregnancies observed during one year of exposure to the method, in 100 women, representing 1,300 cycles of exposure. PI is therefore calculated as follows : number of pregnancies per year for 100 women. In fact, it represents the rate of failure of the method, and is expressed in %.

Practical effectiveness depends on the quality of utilization of the method by the male or female acceptor ; it is generally lower than the theoretical effectiveness.

The criteria on which description of a method is based are effectiveness, safety, reversibility, tolerance and acceptability (price,

simplicity). The first three criteria are objective, whereas tolerance and acceptability depend both on the user (motivation, information, comprehension of the directions) and on the prescriber (motivation, quality and continuity of information given).

Those methods that are most adequate at a given time and for a given person vary, depending on a great many factors : the person's age, state of health, desire to space, limit or avoid births, socioeconomic status, educational level, ethical and religious precepts, and living conditions. There is a preferred method for each individual, which varies in time. Methods are also more or less accessible depending on the existing health services and local supply and delivery conditions.

PHYSIOLOGY OF REPRODUCTION

Human reproduction involves the fertilization of an ovum by a spermatozoon. Once fertilized, the egg is imbedded in the woman's uterus and begins to develop (36).

PHYSIOLOGY OF REPRODUCTION IN MEN

The male genital organs are shown in figure 7. When the young man reaches puberty, his testicles begin to produce spermatozoa, and continue to do so throughout his life. When a man has intercourse, the spermatozoa contained in his semen are ejaculated by the penis into the woman's genital tract. In most cases, a spermatozoon is capable of living from 24 to 120 hours. Millions of spermatozoa are ejaculated at once, but a certain number of factors are at work in enabling one of these to reach and fertilize an ovum : the sturdiness of the spermatozoon, which must survive its migration along the female genital tract, the speed with which it moves, the presence of sufficiently nutritious female genital secretions (37).

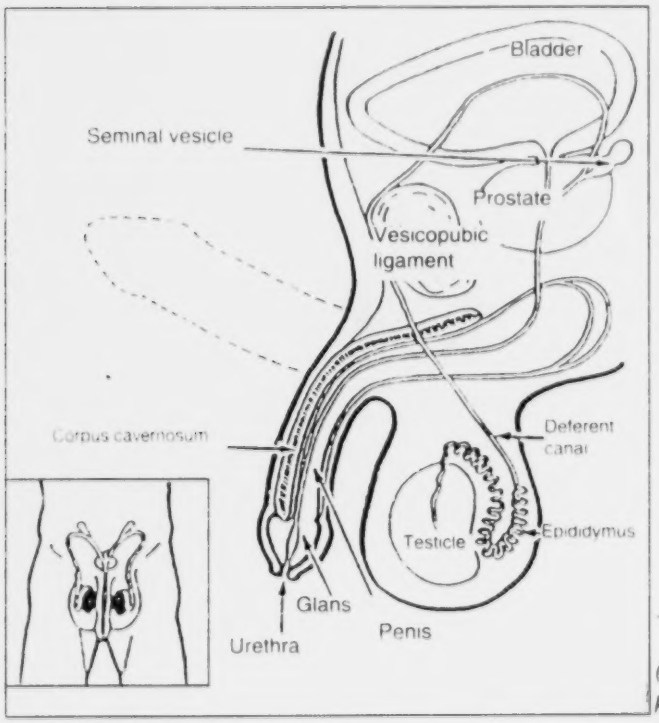


Figure 7 : Male reproductive organs.
Source : Ibid. 36 : 11

(36) Natural family planning : a guide to provision of services. Geneva : WHO, 1988.

(37) Barrier contraceptives and spermicides : their role in family planning. Geneva : WHO, 1987.

PHYSIOLOGY OF REPRODUCTION IN WOMEN

A woman's ability to produce an ovum and to become pregnant varies in time, in a cyclic manner. The first day of menstruation is considered the first day of the cycle. During the first part of the cycle, small sacs known as follicles secrete the female sexual hormone : oestrogen. The rising concentration of oestrogen stimulates the development of glands on the cervix (the lower end of the uterus, opening into the vagina), which in turn secret a thin, slippery, lubrifying mucus known as the "optimal" mucus ; it generally appears on the vulva several days before ovulation. When the oestrogen concentration is at a peak, its action causes one or occasionally several follicles to burst and to free an ovum. The life span of an ovum is extremely short : it lasts approximately 12 hours, and never exceeds 24 hours. The ovum enters one of the Fallopian tubes and migrates to the uterus. If live spermatozoa are present as the ovum reaches the tubes, one of them may then fertilize the ovum. The high oestrogen concentration during ovulation lubrifies the cervix and causes it to become tender, to move upward and to open. A woman may feel some pain, and suffer from minor bleeding (known as intermenstrual or ovulatory bleeding). When the ovum is fertilized, the egg enters the uterine cavity and nests in the wall of the uterus (figure 8).

Following ovulation, the follicle that freed the ovum becomes a corpus luteum, which secretes oestrogen and progesterone. In case of fertilization, these two hormones help to maintain the uterine mucosa (the endometrium), in which the egg is embedded. Progesterone modifies the cervical mucus : it is no longer fluid and lubrifying, but becomes thick and sticky. This change may be felt at the vulva, which is no longer lubrified. The increased progesterone concentration also results in a rise of at least 0.2 °C in the basal body temperature (the body temperature at rest). When fertilization does not take place, the ovum disintegrates, the oestrogen and progesterone concentrations remain high for about 10 to 16 days, then drop. This drop in the hormone concentrations causes the expulsion of the uterine mucosa, which is menstruation. The first day of the menstrual period corresponds to the first day of another menstrual cycle. Each cycle generally lasts from 28 to 30 days, although some may be shorter or longer.

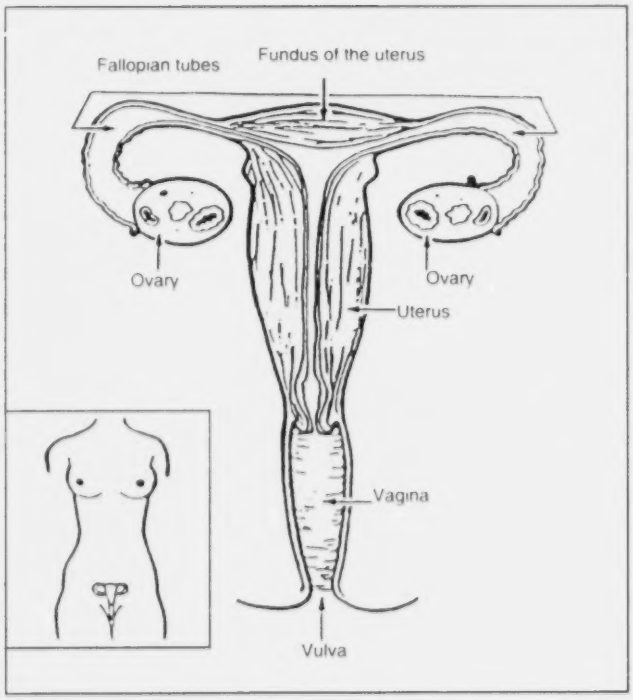
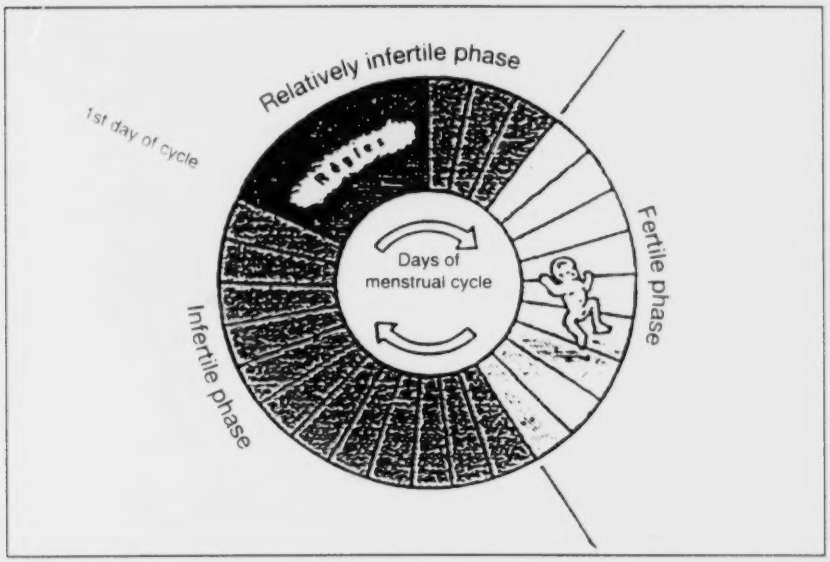


Figure 8 : Female reproductive organs.
Source : Ibid. 36 : 12

A menstrual cycle involves 3 phases, then : (a) a relatively sterile phase (first sterile period), which begins with mens-

truation ; (b) a fertile phase, which includes the day of ovulation as well as the days immediately preceding or following ovulation, and during which intercourse may result in pregnancy ; (c) a phase of post-ovulatory sterility (or second sterile period) which begins when the fertile period ends, and lasts until the beginning of the following menstruation (figures 9 and 10).



33

Figure 9 : Fertile and unfertile phases of the menstrual cycle.
Source : Ibid. 36 : 14.

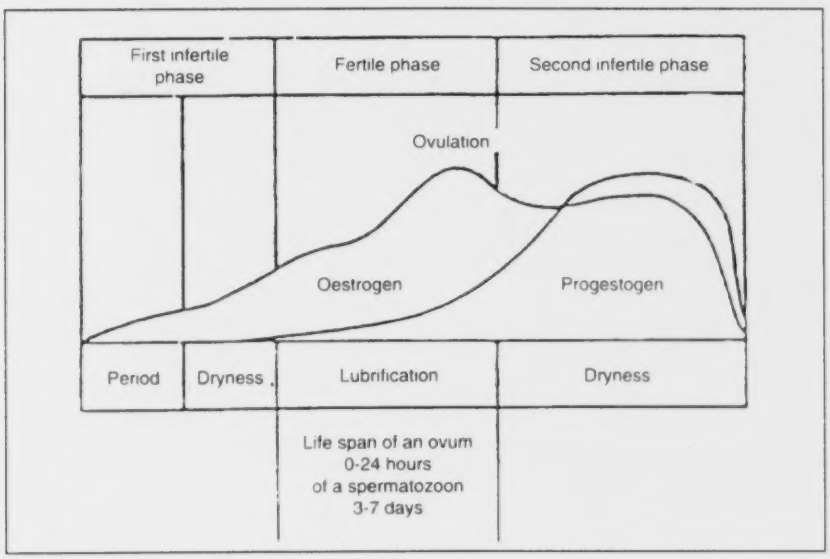


Figure 10 : Phases of the menstrual cycle
Based on : Ibid. 36 : 15.

This entire process is controlled by hormones secreted by the pituitary gland, located in the brain, and by other hormones including the inhibins secreted by the ovary itself. This explains why psychological disturbances or emotional shocks may modify these cycles.

HORMONAL METHODS

ORAL CONTRACEPTIVES

These contraceptives are now widely used, by about 70 million women around the world, especially in the developed countries. Scientific research, both fundamental and epidemiological, is constantly being conducted to improve understanding of the mechanisms of their action, and achieve improved effectiveness and an objective picture of the risks and benefits involved.

Substances used

They are synthetic oestrogens and progesterones, whose chemical formula is not the same as for the hormones produced physiologically by the ovary. They may be used separately or in combination.

The main oestrogen used is Ethinyl oestradiol (EE), at doses of 20, 30, 35 and 50 micrograms ; Mestranol (a less active oestrogen, in a ration of 1/1.7 EE) is used more rarely, at doses of 50, 75, 80 and 100 micrograms.

The derivatives of Progesterone, or progestins, with a contraceptive action include Medroxyprogesterone acetate (10 milligrams : 10 mg), Cyproterone acetate (antiandrogenic action, 1 mg) and Megestrol and Chlormadinone acetates (no longer utilized at present).

Derivatives of Nortestosterone, or progestogens, which are 20 to 200 times as powerful, are also employed ; they include derivatives of Norethisterone (5 mg) and derivatives of Ethynodiol, Norethynodiol and Lynestrenol (1 mg).

Last, and even more powerful, are the derivatives of Norgestrel, which are therefore prescribed at much lower doses ; they are d-Norgestrel (0.125 mg), levo-Norgestrel (0.125 mg), Desogestrel (0.150 mg), Norgestimate (0.250 mg) and Gestodene (0.075 mg).

Pharmaceutical form

Most oral contraceptives contain a combination of oestrogen and progesterone, but in some cases the latter may be used alone, at very high or very low doses. Oestrogen-progestogen combinations are commercialized in the form of packs of 21 or 22 pills, or occasionally 28, 7 of which contain iron. Pills are of several types, depending on their "phase", their dosage, their relatively oestrogenic or progestative bias, and last, the type and dose of progestogen used.

Phasic pills

Monophasic pills are the most common : each pill contains the same amount of oestrogen and of progestogen.

Biphasic pills are those which combine a constant dose of oestrogen with variable doses of progestogen, such as : Levonorgestrel 50 micrograms in pills 1 to 11, and 125 micrograms or 0.125 mg in pills 12 to 21, along with 50 micrograms or 0.050 mg of Ethinyl oestradiol.

Triphasic pills are those in which the amount of oestrogen increases slightly, and is associated with a gradually increasing dose of progestogen, such as 30 to 40 micrograms of EE along

with increasing doses of Levonorgestrel : pills 1 to 6 - 50 micrograms, 7 to 12 - 75 micrograms and 12 to 21 - 125 micrograms.

Sequential pills are those that contain oestrogen only during the first half of the cycle, and associate oestrogen and progestogen during the second half.

Strength

Strength refers to the amount of oestrogen, expressed in EE. A low dose ranges from 20 to 37.5 micrograms of EE, a medium dose is 50 micrograms of EE, while a high dose exceeds 50 micrograms of EE or 100 micrograms of Mestranol (these pills are prescribed for special conditions).

Dominance

Dominance, or bias, depends on the respective doses of oestrogens and progestogens in the association, and provides responses to different cases. In practice, these variations are minor, since the pills now in use contain very low doses and are well tolerated.

The progestogen-only-pills include minidoses (the micro-pill), containing Norgestrel (0.030 mg), Lynestrenol (0.5 mg) or Norethisterone (0.035 mg), which are used during lactation, or in patients with contraindications to the use of the conventional pills. There are also maxidosed progestogen pills, containing Norethisterone (2.5 mg), Lynestrenol (5 mg) or Norethisterone acetate (5 or 10 mg), containing larger doses of the same substances, which are mostly used in case of menometrorrhagia.

Action

Most oral contraceptives have a multifocal action ; that is, they act at different levels. At the pituitary level, the low-dose oestrogen-progestogen association has an antigonadotrophic effect, which is to say that it exerts a negative feedback control on the secretion of LH and FSH by the pituitary gland, thus blocking the hormonal sequence leading to ovulation. At the uterine level, the pill has an anti-nidation effect since it mades the uterine mucosa unreceptive to nidation. At the cervical level, it modifies the cervical mucus, which is no longer suitable for the nutrition and migration of spermatozoa. Last, at the tubal level, tubal motility is decreased. 35

Most pills act in all of these ways, but some mainly have a single type of action. Minidosed progestogens alone act on the cervical mucus only (blocking of ovulation is not systematic). Sequential pills mostly have an antigonadotrophic effect, whereas "morning-after" pills have an anti-nidation effect only.

Tolerance

Oral contraceptives have side effects, which are not dangerous but do limit their tolerance. At present such effects are rare and transitory, with the low-dosed pills. They generally occur at first contact, and subside by the second month. They depend partially on the communication established between the patient and the health agent, who may reassure and inform her, but they do occasionally require a change of dose or the use of another means of contraception. Some side effects, such as headaches, nausea, weight gain (3 kg at most), taut breasts, are caused by the oestrogens, while others such as increased appetite, nervousness, insomnia, libidinal changes and chloasma are connected with progestogens.

Effectiveness

Oestrogen-progestogen associations and maxidosed progestogens are highly effective : Pearl's Index for them ranges from 0.2 % to 0.5 %, depending on the study. Minidosed progestogens must be taken extremely regularly, practically at the same time each day, to achieve comparable effectiveness. When used during breast-feeding, they reinforce the already considerable contraceptive effect of lactation. The actual effectiveness of oral contraceptives is slightly lower : 2 to 5 % of pregnancies annually for 100 users. They still remain the most effective contraceptive means, with the IUD. Practically speaking, effectiveness is diminished by errors or by forgetting, gastrointestinal disorders (vomiting or diarrhoea) and by simultaneous use of other drugs (see drug interactions).

Reversibility

Ovulation resumes at the first, second or third cycle in 99 % of cases, when the pill is discontinued. 1 % of patients show a post-pill amenorrhoea of more than 3 months, 98 % of whom spontaneous resume menstruation within 6 months, while the other 2 % require hormonal treatment (38). This is therefore a totally reversible method. In the case of infertility of hormonal origin, it is not affected by the intercurrent use of the pill. The incidence of spontaneous miscarriages, multiple pregnancies and congenital malformations is not modified by the pill.

Risks

The absorption of synthetic oestrogen-progestogens results in an increased risk of thrombo-embolic disorders, be they venous (thrombo-embolism) or arterial (infarction). This effect is dose-related and is connected with impairment of coagulation factors. When the dose of estrogen is reduced, the frequency of venous thrombo-embolic incidents is decreased. Secondly, the dose of progestogens, responsible for the lowered concentration of HDL-cholesterol, a protective factor in coronary heart disease, has also been lowered.

Clinical findings show the prevalence of the thrombo-embolic syndrome in pill-users to be very low : the risk ranges from 1/2,500 to 1/5,000 depending on the study. It does not increase with the length of pill-taking, and declines slowly following discontinuation. In women with a predisposition to high blood pressure (obesity, family history), the latter may develop, and disappear when the treatment is stopped.

Oral contraceptives slightly disturb the carbohydrate metabolism ; this diabetogenic effect is due to the progestogens, and to Norgestrel in particular. There is no clinical effect, even in diabetic women, provided the disease is properly controlled.

All of these harmful effects are greatly increased by smoking : only in women who smoke and take the pill is an increase in mortality observed in comparison with uncontracepted women exposed to a risk of pregnancy.

Indeed, it should be recalled that in all other cases, and provided the rare contraindications are respected, the risk connected with pregnancy, abortion and childbirth is higher than that linked with

(38) Ibid. 28.

the use of the latest generations of oral contraceptives. Vascular accidents may be prevented by monitoring of blood pressure and the exclusion of patients with hypertension, by satisfactory history-taking, which may exclude genetically predisposed patients, and by the elimination of smoking. There is a slightly increased risk of cervical dysplasia and of epithelioma in situ, especially in patients with a number of partners, whence the importance of regular check-ups (gynaecological examination every six months).

Other advantages

The pill has other advantages such as the attenuation of the premenstrual syndrome, especially in adolescents and premenopausal women, the reduction of the blood flow and of dysmenorrhoea, a lowered risk of iron-deficiency anaemia, protection against pelvic infections (the risk is halved), decreased prevalence of rheumatoid arthritis and of chronic, infectious polyarthritis (CIP) and decreased frequency of benign ailments affecting the breast (cysts, fibroadenomas). It does not modify the risk of breast cancer, but does decrease the risk of cancer of the endometrium (or of the uterine body) and of the ovaries, and of developing uterine fibromyomas, as well as of ovarian cysts. It combats endometriosis and protects subsequent fertility by decreasing the frequency of fibromas, ovarian cysts and inflammatory pelvic conditions.

Contraindications

In some cases, the contraindications may be deduced from the risks entailed by the use of oral contraceptives ; these include severe hypertension, disordered lipid and carbohydrate metabolism. A history of serious illness in the family (death of young people) or a personal history of vascular accidents (infarction, deep thrombophlebitis), hepatitis within the last year or gynaecological cancers should be taken into consideration. However, the main danger resides in smoking.

In case of sickle-cell disease, there is no problem for heterozygotes, whereas in homozygotes the theoretically increased risk of thrombosis should be balanced out with the risk connected with any pregnancy. Clinical experience shows that these women may take the pill.

Certain other factors such as obesity and age do not constitute contraindications, except when other concomitant risk factors which increase with age, such as high blood pressure or smoking, are present. Young nulliparous women, adolescents and women over 35 may take the pill. Venous circulatory disorders of a mechanical type, such as varous veins are not a contraindication either. Most women users of oral contraceptives in the developed countries are aware of the risks involved in taking the pill, but often do not know how it acts. Since the method is effective and generally well tolerated, this does not influence compliance with treatment, that is, the regularity with which the pill is taken. The non-comprehension of the mode of action is not a contraindication provided the instructions for use are properly followed. Conversely, the cost, supply difficulties, the need for medical follow-up, the constraints involved in daily pill-taking and the taboos and erroneous ideas (the pill causes cancer, makes you barren, makes you gain weight) may constitute drawbacks.

Drug interactions

Some drug interactions do exist, since certain drugs interfere with the metabolization of oral contraceptives, thus decreasing their

effectiveness. This is the case for anti-tuberculosis drugs (Rifampicine, Isoniazid), anti-epileptic agents (Phenantoin and derivatives, Phenobarbital, Carbamazepine), since they increase breakdown in the liver. Antibiotics (Ampicillin, Neomycin, Tetracyclines, Nitrofurantoin, Bactrim) deter intestinal resorption. Antidepressors and hypotensors create competition in the liver. The pill may limit the effectiveness of other drugs : it enhances anticoagulant action and decreases the effect of vitamin B6, oral antidiabetic agents and antihypertensors.

Precautions should be taken in case of liver disorders, Crohn's disease, gastroenteritis and epilepsy : the doses must be increased or decreased.

Consultations and monitoring

Before an oral contraceptive is prescribed, a consultation and a gynaecological examination are necessary. The woman's medical history indicates the existence of any personal or familial problem. A medical examination including blood pressure and a gynaecological examination must be performed. Next, the type of pill is selected, and the patient is instructed in its use and encouraged, so as to improve acceptability and rate of continuation (possible side effects and instructions are explained).

A number of studies have shown that complicated, costly blood tests are not necessary. Patients with contraindications may be detected by their medical history and examination, and guided to other methods.

A first check-up after three months of pill-taking is useful, but an annual visit is sufficient thereafter if no subjective or objective problem arises.

Which pill should be prescribed ? While the sequential pills and the monophasic or biphasic 50 microgram pills are no longer the first choice, no more than progestogen-only-pills, they are nonetheless of value, either for the compensation of some side effects caused by excessively low doses, or in some pathological conditions.

When prescribing, a pill containing about 30 micrograms of EE should immediately be considered. There is a vast range of pills in this category, but the development of new progestogens does not necessarily preclude use of the older ones, since the type of progestogen and the balance between the EE and the progestogen differ from one pill to another, even within the category of low-dose (30 micrograms of EE) pills : some tend to be more on the progestogen side, others have an oestrogenic bias (39).

Table 6 shows the most common complaints which do not require discontinuation of the method, since they are not harmful to health, but do necessitate a change in the type of pill used, when possible, or simple reassurance. Adjustment should be based on simple common sense, in consideration of the oestrogenic or progestogen bias of the contraceptive involved.

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(39) P. DELVOYE. La contraception en 1990 : pour une utilisation rationnelle des méthodes contraceptives. In : Séminaire sur la Planification Familiale. Bucarest : OMS-EURO Unité de Sexualité et Planification familiale - Ministère de la santé de Roumanie, 1990.

Table 6
COMPLAINTS RECORDED

Side effects	Causal agent	Adjustment
Menstruation		
menorrhagia	Oestrogen	Higher dose of progestogen
hypomenorrhoea	too little OE	Higher dose of oestrogen
amenorrhoea	too little OE	Higher dose of oestrogen
Spotting	too little OE	Higher dose of oestrogen
Breasts		
mastodynia	too much OE	Higher dose of progestogen
Digestive system		
nausea	too much OE and Pg	Lower total dose of steroids (EE+Pg)
bloating	Progestogen	Less progestogen
Weight gain		
retention of water (heavy legs)	Oestrogen	Less oestrogen
increase in fatty tissue	Anabolic progestogen	Less progestogen or less anabolic progestogen
Vaginal dryness	Insufficient OE	Higher dose of oestrogen
Decreased libido	Insufficient OE	More OE pill (sequential)
Migraine	Oestrogen	Less oestrogen
Acne	Androgenic progestogen	Pill with antiandrogen (Diane 35)
Benign pathology		
fibroma	Oestrogen	Higher dose of progestogen High-dose progestogen-only-pill
fibrocystic disease of the breasts	Oestrogen	idem

OE : Oestrogen
Source : Ibid. 39.

39

Portrait of the user

Many women may take the pill, but the ideal user may be portrayed as a young woman with some education and relatively easy access to health services, for whom the price of the pill is acceptable and even low, who has overcome her apprehension and is convinced that the pill is not harmful to her health, who does not smoke, does not suffer from one of the (rare) contraindications and is well counselled by a health agent who is also convinced !

INJECTABLE INTRAMUSCULAR CONTRACEPTIVES

These are generally long-action controlled release progestogens, used in trimestrial intramuscular injections, but there are also monthly-injected oestrogen-progestogen associations, widely used in China and Chile. These hormonal preparations have been on the market since 1967, and are presently employed in over 100 countries.

Substances

These contraceptives are of two types. One is composed of microcrystals of Medroxyprogesterone acetate, in an aqueous solution,

which break down slowly, at a dose of 150 mg (IM injection every three months), or 500 mg (injection every six months). The other is an oily solution of Norethisterone enanthate, dosed at 200 mg, injected every two months for six months, then every three months.

Action

The action is practically the same as for oral contraceptives : the only differences are the strengths and mode of delivery. Ovulation is generally eliminated, by inhibition of the secretion of gonadotrophins at the pituitary level and blocking of the pituitary-ovarian axis, making the endometrium unsuitable for nidation, the cervical mucus impermeable and disturbing tubal mobility. These contraceptives are highly effective, since the PI is 1 to 2 %.

Tolerance

Side effects are essentially amenorrhoea, with elimination of menstruation, sometimes accompanied by spotting (irregular, minor bleeding) or metrorrhagia, occasionally with heavy bleeding, which is treated by the administration of oestrogens ; these effects are caused by the atrophy of the endometrial lining. There is no monthly deprivation bleeding, as is the case when oestrogen-progestogens are taken cyclically. Amenorrhoea does not present any threat to the genitals or risk of infertility, but is often poorly accepted, since it is assimilated to menopause or sterility : the regular occurrence of menstruation may have a symbolic meaning, and be a sign of "normalcy". However, in some parts of the world, women who live in considerable material discomfort greatly appreciate the absence of menstruation.

Users may also undergo a weight gain (2 to 5 kg), more or less appreciated, depending on the culture ! There may also be a variable decrease in libido.

Other advantages

The non-contraceptive advantages are comparable to those derived from oral contraceptives ; that is, reduced frequency of iron-deficient anaemia, of symptoms of sickle-cell disease and of inflammatory pelvic conditions. Dysmenorrhoea disappears as well, and endometriosis is checked. These substances do not increase the risk of arterial or venous vascular problems, and have no effect on the amount or quality of breast milk.

Contraindications

There are few contraindications ; these include genital bleeding of undetermined origin, obesity and hypertension (?). Like implants, these preparations are not metabolized by the liver, owing to their mode of administration, and therefore do not interfere with the synthesis of coagulation factors or of blood pressure regulators.

Reversibility

Reversibility is complete, with resumption of menstruation six months after the last injection for 50 % of women, and twelve months thereafter for 85 % of them. The others will have their period within two years of discontinuation of contraception. The pregnancy rate is the same as following discontinuation of oral contraceptives or removal of an IUD : 60 % of women become pregnant within the first year, 90 % within two years.

Portrait of the user

The user is often a multipara, who desires long-term contraception, or even definitive protection, but cannot or will not opt for sterilization ; she accepts or desires the absence of menstruation, is aware that she may suffer occasional bleeding, has rather easy access to a properly equipped health service. She may also be a

woman with a risk of a cardiovascular condition or sickle cell disease, one who is breast-feeding and desires complete protection. Like all hormonal methods, the injections have been the object of denigration and misinformation campaigns. Only informed, motivated and competent health workers are in a position to counter these, and to counsel patients and their husbands validly.

IMPLANTS

The most frequently used implant, Norplant, is composed of 6 silastic capsules measuring 34 millimetres each, containing 216 mg of d-Norgestrel in all. This is therefore a low-dose progestogenic preparation. The capsules are inserted in the subcutaneous tissue of the forearm, in a fan-shaped manner, using a trocar. Their removal requires an incision, under local anaesthesia. They are active for five years.

Action

They act in the same way as the mini-pill ; that is, by making the cervical mucus impermeable, and thus preventing the passage of spermatozoa, but also of many germs (but not viruses). This explains why hormonal contraceptives in general afford protection against genital infections. At first, the implant releases 8 micrograms of d-Norgestrel a day, and at the end of the five years it releases 30 micrograms a day, which is to say, one fifth of the daily dose contained in a micro-pill.

Effectiveness

Effectiveness is excellent. According to currently available studies, the PI at one year is 0.6 % and at the end of the second year it is 1.5 %. If the implant is removed, either in the course of the five years, or at its expiry, fertility is seen to resume rapidly : reversibility is complete.

Tolerance

There are few side effects, but these may be extremely unpleasant: headaches and occasional bleeding, which are only truly relieved by removal of the implant. Research over longer periods is required to determine the impact of these drawbacks on the continuation rate. Because of its very low progestogen content, the implant does not affect coagulation factors, lipid or carbohydrate metabolism, or the hepatic functions. Its effectiveness is explained by the continuous circulation of the substance in the organism, which guarantees constant action on the cervical mucus. Contraindications are limited to gynaecological cancers and bleeding of undetermined origin.

Norplant is approved in 12 countries, and is presently being tested in 37 others.

Portrait of the user

The user, irrespective of her age, is a woman who wishes long-term protection requiring no frequent contact with a specialized health service. The opinion or advice of a trained health agent is sufficient. She may be breast-feeding. She may also present a contraindication to the use of another hormonal method : possibly smoking, poorly controlled diabetes or high blood pressure, chronic hepatitis, active or not. Last, she may have trouble respecting the daily discipline of pill-taking, or of the trimestrial intramuscular injection, for financial, geographic or social reasons. The implant is definitely a practical, effective solution. Unfortunately it remains relatively costly. Occasional bleeding should not be too great a problem for women in some developing countries, provided it is not too heavy, since most of their reproductive life is spent in amenorrhoea (during pregnancy or lactation) or irregular menstruation.

METHODS INVOLVING SELF-OBSERVATION OR PERIODIC ABSTINENCE

These methods share one basic rule : sexual abstinence during the fertile part of the menstrual cycle : that is, during ovulation and the days before and after it. They recommend different means of detecting this period as accurately as possible.

Some people improperly call them "natural" family planning methods. This is meaningless, since family planning is not natural, by definition : it is the product of a conscious choice, and abstinence is a cultural fact that is in no way natural. The term is used to designate the fact that these methods do not modify the physiology of the female menstrual cycle, but are based on an understanding of this physiology.

THE OGINO-KNAUSS METHOD

This is also known as the calendar method, or rhythm method. The peri-ovulatory period, or fertile period, is determined by a calculation based on the length of the previous menstrual cycles. For a complete year, the potential user must keep a menstrual calendar - that is, she notes the length of her cycles and the dates of her periods. She may then apply the following equation (Ogino) :
- shortest cycle - 18 days = 1st day of the fertile, or "at-risk" period ;
- longest cycle - 11 days = last day of the "at-risk" period.

She must of course refrain from intercourse during this period. In practice, this estimation is very inaccurate for a number of reasons. Disturbances in the cycles occur frequently, and ovulation may occur earlier or later than usual. Many women believe that the cycle begins at the end of their period, and not at the beginning. The duration of abstinence is long, and rarely respected. For all of these reasons, the method has a high failure rate, and should not be recommended. Although it is cost-free, it may impart a false feeling of safety through long periods of imposed abstinence. Like coitus interruptus, this method was extensively used in Europe when no modern contraceptive methods were available. It was coitus interruptus, however, which is more effective, perhaps more acceptable and definitely easier, which lowered fertility there.

THE TEMPERATURE METHOD

It is based on the fact that body temperature rises about 48 hours before ovulation, owing to the effect of the progesterone secreted by the ovary on the central "thermostat" located in the hypothalamus. This increment ranges from 0.2 to 0.5 degree ; the user must take her temperature every day at the same time and under identical conditions, and plot a curve that will show when ovulation occurs. The fertile period ends on the third day following ovulation, and intercourse is then possible until the following menses. Thanks to a rather long period of abstinence, this method is effective (PI 3 %), but it is delicate, and requires extremely stable living conditions. Failures are due to intercurrent variations in temperature (flu, fatigue,...), to poor observation of the rules, irregular cycles, including premenopause, for instance.

THE BILLINGS METHOD

This method, also called the "cervical mucus method", is based on observation of the mucus, a substance produced by the endocervical glands, which nourishes the spermatozoa and contributes to their mobility during the ovulation period.

It is practically absent at the beginning of the cycle ("dry days"), then becomes sticky and clouded, but is not profuse ; from the ninth to the fourteenth day of the cycle, the mucus is abundant,

transparent and slippery (like raw egg white), whereas it again becomes thick, sticky and clouded during the peri-ovulatory period.

The user must therefore assess the characteristics of the mucus on the vulva or deep within the vagina, at the entrance to the cervical orifice, every day, and abstain from intercourse until the fourth day after the peak mucus production. Intercourse is also possible during and after menstruation, until the first day of fluid mucus. It is not authorized during "dry days", or when the mucus cannot be properly assessed because of vaginal infection.

This is an effective method, provided the environment is sufficiently clean and strict discipline is observed with respect to self-observation and periodic abstinence. It may be applied even when cycles are irregular, but requires good decision-making ability and adjustment to unusual circumstances (such as vaginal infections).

THE SYMPTO-THERMAL METHOD

This method combines the recording of temperature, the observation of the cervical mucus and of other indications of ovulation such as pelvic pain and a feeling of abdominal heaviness, the position, firmness and opening of the cervix. The calculation of probable fertile days may be added to this. The reliability of the method increases of course with the accuracy with which the fertile period is determined.

COMMENTS

What characterizes these methods is their emphasis on abstinence from intercourse. They are possibly more acceptable in those cultures where sexual abstinence (in women, in any case) is viewed as normal and in fact encouraged, as during breast-feeding, for example. In those cultures in which, to the contrary, freedom of expression of sexual desire is valued, abstinence is only accepted by a few, highly motivated users, often for religious reasons. However, the discontinuation rates are higher everywhere with these methods.

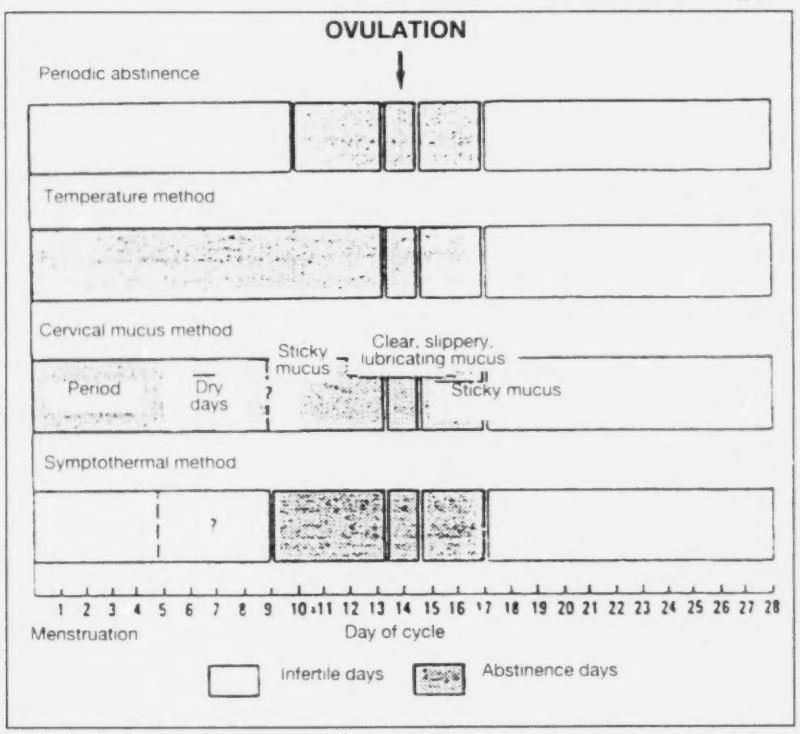

Figure 11 : Approximate duration of abstinence required by different natural methods for a 28-day cycle.

Based on : HERMANN C. et al. In : Ibid. 36 : 19.

Failures are explained by the difficulty in respecting the discipline of self-observation (for the woman) and of abstinence, but also by the concrete problems entailed by their application. How can an illiterate woman living in a rural area where dietary conditions, cleanliness and even safety are precarious, use these methods correctly? Nevertheless, some programmes have been successfully conducted with illiterate populations, in India for instance.

The traditional rules governing sexual abstinence are increasingly upset by changes in life style caused by urban development, migration, socioeconomic difficulties and changes in women's role.

These methods are not appropriate for social groups in which it is normal to have multiple sexual partners, since both partners theoretically participate in the same sexual discipline here. Conversely, in some instances couples find their sex life improved by the need to communicate, and to discover other means of satisfying their desire.

Application of these methods is difficult when women menstruate irregularly (post-puberty, premenopause, lactation, emotional shocks), since the user must have more or less regular cycles. It is a fact that in some rural areas, especially in developing countries, women are not very familiar with the notion of a cycle, since amenorrhoea is very much their usual state : between puberty and menopause, they go from one pregnancy to another, separated by prolonged periods of lactation.

These methods are inexpensive. They require the participation of "instructors", health professionals or others, who are patient, motivated and give freely of their time during the learning period, which lasts several months.

When properly used they are effective (sympto-thermal method). Like all other contraceptive methods, their effectiveness depends on motivation and strict use.

They enable women to achieve better awareness of their own body, and to feel responsible for their fertility, without having to turn to medical help. This ability to recognize the fertile period may in fact be used by infertile couples, or those who are anxious to achieve pregnancy rapidly. There is a recent variant in which the hormone concentrations in urine are assayed, at home, to determine the approximate time of ovulation. This is of course a costly procedure which cannot be applied on a large scale.

There are no medical contraindications or side effects with these methods. The only reserve involves women for whom a pregnancy would truly be dangerous (diabetes, uterine scars, exposure to illegal abortion) and who should use a more effective, less demanding method.

These methods do not have the non-contraceptive protective effects of some other methods such as hormonal contraception, including reduction of the risk of certain cancers, of fibromas and of pelvic infections.

Portrait of the user

The user is often a middle-aged woman whose maturity allows her to accept and successfully practice a disciplined life. She may be poorly informed (sometimes by health agents themselves), and exaggerate the dangers entailed by the other methods, or have had a bad experience with them. Such "negatively motivated" users often abandon these overly demanding methods, and count on luck or coitus interruptus. Often the couples involved find a source of mutual respect and sexual communication in these methods, which they would not have enjoyed otherwise, had the woman been alone in taking responsibility for contraception.

INTRAUTERINE DEVICES OR IUDS

The first devices to be inserted in the uterus (or womb) for contraceptive purposes were made of plastic. It was rapidly realized that their effectiveness could be enhanced by adding a copper wire, rolled around the plastic tube, the ionization of which - that is, its gradual dissolution - has an enzymatic action at the endometrial level. The most used of the copper IUDs are the Ts. They are effective and non-traumatic for the uterus. There are several models, which differ in their copper load (200 to 380 mm²), and therefore in their maximum period of effectiveness (2 to 5 years), as well as in their size. Multiloads are frequently employed, because of their easy insertion in particular. Those in the shape of a 7 are more rarely indicated, because of possible uterine perforation. The Dalkon Shield has been discontinued because it may cause severe pelvic infection. There are also some IUDs which contain a small dose of progestogen (Progestasert). Their cost is higher, and their action is limited to eighteen months.

Action

Many other models are used on a large scale (simple metal rings - 50 million women in China) or experimentally. There is an attempt to reduce the risk of expulsion and to improve tolerance in new models.

The presence of the IUD in the uterine cavity acts at several levels : biochemical impairment at the level of the ovum, deterioration of spermatozoa, development of an inflammatory condition on the endometrial mucosa, and decreased tubal motility. As a rule, IUDs prevent fertilization in the Fallopian tubes. They also make the uterine mucosa unsuitable for the nidation of an egg, which is also deteriorated.

Risks

The choice of an IUD depends mostly on what models are available locally, as well as on size and copper load. Before insertion, careful disinfection of the cervix is essential. Insertion may be performed during the menstrual cycle, preferably just after menstruation, or immediately after an abortion, when the uterus has been evacuated and provided there is no infection, and last, during the postpartum period, when the uterus has returned to normal (after 2 to 3 months). An IUD may also be inserted up to 72 hours after unprotected intercourse, as a"morning-after" method.

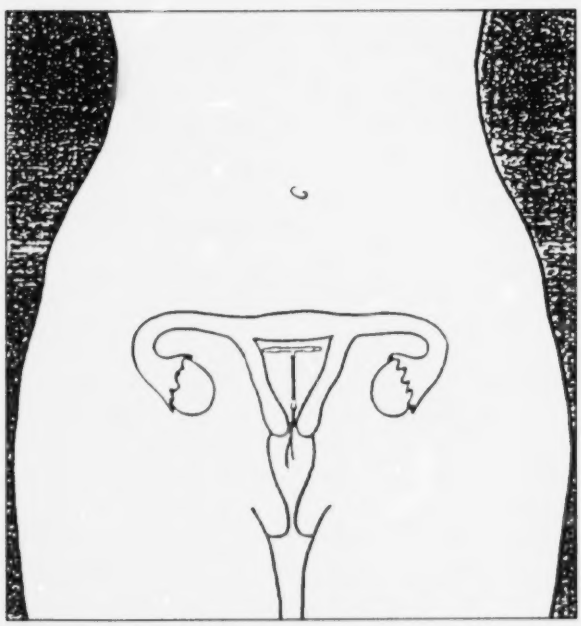

Figure 12 : Intrauterine device (IUD)

Source : IUDs : a new look. Popul. Rep. (B) 1988 ; n° 5 : 20.

The average duration of action is five years. Removal makes use of the thread present in the cervical opening, but occasionally requires use of a small curet.

There are four risks. Perforation of the uterus, with the IUD moving into the abdominal cavity, practically only occurs during insertion in cases of undiagnosed uterine retroversion or when the device is inserted too soon after abortion or parturition. The second risk is spontaneous expulsion, which also occurs during postpartum or in grand multiparas.

The third is ascendant infection : germs travel up the threads of the IUD. This is the main risk involved in this method, especially in those

areas with a high prevalence of STD. Recent studies in France, to take one example, have shown that the risk of salpingitis and sterility caused by IUDs, originally estimated at about 10 %, is in fact only 3 to 4 %. Because of this risk, IUDs should not be inserted in nulliparas, except if this is the only way of preventing them against the risk of undesired pregnancy and abortion, the health-related consequences of which may be far more serious. If the patient suffers from yellow discharge, pelvic pain and temperature, the IUD should be removed and antibiotics prescribed.

Extrauterine or ectopic pregnancy (0.4 %), the fourth risk, requires emergency surgical action of course.

Effectiveness

Effectiveness is high, and has been further improved by the addition of copper or of progestogen : the PI (Pearl's Index) is 2 % of intrauterine pregnancies per 100 women/years. Such pregnancies generally occur during the first year. The prevalence of extrauterine pregnancies is 0.4 %.

Reversibility

Reversibility is not as good as with hormonal contraceptives, but it is still excellent, and mostly depends on the percentage of pelvic infection (endometritis, annexitis, salpingitis). These devices certainly do not merit their French name of "stérilets".

Tolerance

Side effects may include pelvic pain, occasionally passing, which is not always a sign of infection, or heavy, painful menses, and last, metrorrhagia (occasional breakthrough bleeding in the course of the cycle).

Contraindications

Contraindications include past history of infection or of extrauterine pregnancy, nulliparity, endometriosis, high risk of sexually transmitted diseases (multiple partners), pregnancy, fibromyomas, gynaecological cancers and uterine anomalies either congenital or subsequent to surgery.

As mentioned, nulliparity or past history of pathology are contraindications, to be reconsidered in the local context. A previous caesarean section is not a contraindication.

Table 7

ADVANTAGES AND DISADVANTAGES OF THE IUD

Advantages	Disadvantages
• easy to insert	• competent health service
• long duration of action	• medical help available in case of emergency (rare, possibly serious)
• good protection	
• good reversibility	
• no motivation required, except in making decision	• profuse bleeding during menstruation
• regular medical monitoring	• iron deficiency

Insertion of an IUD is a simple medical act, and may be performed by a number of professionals (doctors, midwives). This is one of the least costly methods, with long-lasting action.

Portrait of the user

The user is a woman aged 25 to 45, who has already had two or three children, and wishes to wait a rather long while before having another child. She may also be a younger woman with a contraindication (recent hepatitis, for instance) to oral contraceptives, or who finds the absence of menstruation connected with trimestrial injections upsetting, or who does not have access to these methods for financial reasons. Patients wearing an IUD must go for an annual check-up if possible, and a reference centre located at a reasonable distance must be available in case a complication occurs.

"BARRIER", OR PHYSICAL METHODS

METHODS FOR WOMEN

These include physical "barriers ; that is, cervical caps and diaphragms, and intravaginal chemical methods - spermicides - which may be used separately or in combination. Vaginal contraception is an ancient technique, much used in Europe and in the USA before it was eclipsed by the development of pills and IUDs. There is renewed interest in it at present, since it affords protection against sexually transmitted diseases, except AIDS, and also because some people view it as more "physiological".

Physical and chemical methods fulfill the two major requirements of harmlessness (they are not dangerous, although spermicides may be teratogenic for spermatozoa) and reversibility. Their acceptability and effectiveness are less satisfactory than for the other methods described above.

Diaphragms

Diaphragms are convex, dome-shaped disks made of thin, soft latex, ringed by a spiralled metal, latex-covered spring. There are different sizes, to fit each vagina. They cannot be used in case of genital prolapse.

The health professional in charge of prescribing one must take measures for the diaphragm carefully, using the appropriate rings, and make sure the user has assimilated the insertion and removal techniques. The device must be inserted before intercourse, with a spermicide jelly when feasible, to increase effectiveness, and left in place for 4 to 8 hours after the last intercourse. It should not be left for more than 24 hours : some cases of toxic shock have in fact been reported. The device must be washed in cold or warm water and talcum powder applied, to avoid porousness. Reasonable cleanliness is required in handling it, along with strict discipline. When properly used, it retains its effectiveness for about one year.

Tolerance is excellent. A device of the right size does not interfere with intercourse.

Effectiveness depends on the insertion technique (on the diaphragm's position within the vagina) and on the user's motivation. This explains the existence of considerable variations in PI, from one study to another : from 1.9 % to 15 % for the diaphragm used alone, and from 1 to 10 % when it is used in combination with spermicides.

Cervical caps

These look like large thimbles, and must be inserted in the cervix in stopper-like manner. A long, cylindric cervix is required, to avoid any risk of displacement. The indications are mostly the rare anatomical contraindications to diaphragms. The addition of a spermicide is preferable.

Advantages - disadvantages

These methods are danger-free, but they are far less effective than modern methods, and users are therefore more exposed to the risk of pregnancy, and those attendant on abortion and delivery under sometimes difficult conditions.

They require that the user have an understanding of the anatomy of the vagina, respect proper hygiene and be constantly motivated. When used correctly, they are practical and effective, and do not interfere with intercourse.

Their cost mostly depends on whether spermicides are used, since these cost much more than the diaphragm or the cervical cap. This is almost a non-medical method, since the health agent only intervenes for an initial examination. However, an annual examination is always preferable, and further explanation is often necessary.

Mention should also be made of female condoms, now still in the experimental stage. These are thin latex shields, much larger than male condoms. They have a rigid ring, which remains on the outside of the vulva. They are under study, and have been found to be impractical and unpleasant, although effective and affording protection against STD, including AIDS.

Portrait of the user

The user is neither a very young woman nor a grand multipara, but rather a middle-aged woman who is quite familiar with her body, has a rather regular sex life and a degree of personal discipline.

Spermicides

The use of spermicides has been known since ancient times : in Europe, contraceptive vaginal suppositories were first marketed in 1885 : they contained sulfate of quinine and cocoa. This type of suppository was also hand-produced in Rumania until the 1989 revolution, when all contraception was prohibited.

Products

Modern spermicides date back to the 1950's. The active substances are of three types. There are superactive agents (benzalkonium chloride, nonoxynol-9), which decrease the superficial membranal tension in spermatozoa, bactericidal agents (quaternary compounds, derivatives of quinine, phenylmercury acetate), which upset the spermatozoa's metabolism, and highly acid agents (lactic, tartric and citric acid). In practice, only the former are used at present.

Benzalkonium chloride acts at the cell membrane level, causing destruction of the flagella and explosion of the head of the spermatozoon. In vitro, 0.005 mg of this substance inhibits 0.2 cc of fresh sperm containing 70 million perfectly mobile spermatozoa in 20 seconds. It is sold in the form of vaginal suppositories, tablets or cream with applicators. Nonoxynol-9, sold in the form of suppositories, is ten times less active.

These substances also possess bactericidal and antifungal properties. More recently, vaginal sponges have been produced. The benzalkonium sponges measure 40 mm by 30 mm and are impregnated with 5 g of 1.2 % cream. Placed deep inside the vagina, they are active immediately and for 24 hours. They must be removed at least 2 hours after the last intercourse. Nonoxynol-9 sponges are slightly larger (50 mm by 30 mm), must be moistened before use and left in the vagina at least six hours after the last intercourse.

All of these products must of course be placed in the vagina about one-half hour before each coitus. Protection lasts 4 hours for suppositories and creams, 24 hours for the sponges.

Tolerance is usually good. Mucosal irritation occurs in some rare instances in the woman or her partner.

Toxicity is considered to be nil for the superactive agents, which form a thin film completely covering the vaginal walls without crossing them. The product does not enter the bloodstream, then. A possible teratogenic effect on spermatozoa in case of pregnancy has not been proved.

Contraindications

These methods may be used during lactation. The only contraindication to their use is the existence of vulvovaginal irritation of unknown origin, which resists treatment, and may perhaps be caused by their use. Conversely, these substances act as bactericidal agents, combating gonococci, chlamydias, trichomonas and mycoplasms, and are antimycotic agents as well. They do not constitute adequate treatment of these infections, but do afford relative protection. They are not very active against the treponema, which causes syphilis, on the other hand, and do not offer protection against contamination by viruses such as the herpes or AIDS viruses.

It is preferable that they not be left in the vagina for more than 24 hours, and not be used during menstruation.

Effectiveness

Effectiveness depends on how strictly they are used, and therefore on the motivation of the user and her partner, and it also varies with the substance used. According to recent studies, spermicides, either in suppositories or in creams, have a PI of 0.9 to 1.6 per 100 years/women, while the PI is 3.5 for 100 years/women for benzalkonium sponges, and 10 to 3.5 per 100 years/women for nonoxynol sponges, depending on how experienced the user is.

It is important not to wash or to inject soapy or medicated, anionic substances into the vagina, since these cancel out the cationic effect of the spermicide, and greatly reduce its effectiveness.

These products are usually among the most costly contraceptive means, but the cost of the method necessarily depends on fluctuations on the local market, and on the frequency of sexual intercourse.

Portrait of the user

The user is often a woman with a physical, psychological or cultural contraindication to use of the pill or the IUD. She may also prefer a type of contraception which does not require medical intervention, either out of modesty or because such services are costly and generally not readily available. She is able, on the other hand, to sustain the cost, which is much higher than that of an IUD, for example. She may also be a woman who wishes protection during a relatively short period (seasonal home-coming of the husband, for instance, or interval between two pregnancies), and who accepts the eventuality of a pregnancy (40) (41).

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(40) D. HASSOUN. Les méthodes barrières. Ibid. 39.

(41) D. SERFATY. Les éponges vaginales contraceptives. La pratique medicale, 1985 : n° 14.

METHODS FOR MEN

Withdrawal, or coitus interruptus

The basic idea is that the penis is withdrawn from the vagina before ejaculation ; this requires great self-control. In addition, the spermatozoa that land on the vulva may make their way to the cervix if the mucus is abundant, and a small amount of sperm may leak out before true ejaculation. This explains why the Pearl's Index is at least 25 (25 pregnancies per 100 years/women, compared to 85 pregnancies in case of natural fertility).

This method was widely resorted to before the development of modern contraceptives, and this is still the case in many countries, developed or not. Coitus interruptus is given all sorts of familiar or sophisticated names, which makes estimation of its prevalence difficult. In western Europe it is used by nearly 30 % of contracepted couples. Despite its relative ineffectiveness, withdrawal was instrumental in the downward turn in demographic expansion in 19th century Europe. Many couples, whose fertility is perhaps low, use it for years and seem satisfied with it. And yet, some women complain of permanent anxiety connected with the fear of pregnancy, as well as of pelvic pain, which is attributed to the lack of prostaglandin, provided by the sperm during normal sexual intercourse.

This method cannot be recommended, unless there is really nothing else available. In fact, withdrawal is a completely non-medical solution, which has only to do with a couple's intimate relations. When the know-how is lost, it is replaced by abstinence or intercourse at the end of menstruation.

Condoms

50

These are thin, cylindrical latex sheaths which are pulled over the erect penis so as to prevent the sperm from spilling into the vagina.

High-quality condoms, correctly employed, are valuable in that they afford real protection against sexually transmitted diseases, especially AIDS. They are recommended for individuals who have a number of sexual partners, or for couples at the onset of their relations.

The effectiveness depends on the quality of the rubber, on any lubrification, and on strict observance of instructions for use (the condom must be kept on the penis during withdrawal, for instance). The PI ranges from 1 to 15 %, in different studies.

Acceptability varies considerably in different cultural contexts, depending on the significance of intercourse : it is very well accepted in Japan, where it is used by 68 % of men, and much less so in most African countries, despite active promotion campaigns based on the prevention of STD. Such campaigns are also conducted in developed countries, where control of the quality of condoms and the combat against epidemics of STD (AIDS, herpes, HPV : Human Papilloma Virus, connected with cervical dysplasia and cervical cancer) are priorities. While affording protection against STD, condoms also reduce the incidence of cancer of the cervix.

There is no medical contraindication for the use of condoms, but they do occasionally induce vulvar or vaginal irritation if they are not lubrified.

This contraceptive is mostly sold commercially (drugstores, rail-

road stations....). Condoms are occasionally sold as protective agents against STD only, and not as contraceptives. They are easily available but costly.

POST-COITAL CONTRACEPTION

When intercourse occurs unexpectedly, or when contraception fails - when a condom breaks, for instance - especially during the probable ovulation period, but also at any other time in the cycle, what can be done ?

- Monophase pill dosed at 30 micrograms of ethinyl oestradiol (EE): 3 pills, 12 hours at most after intercourse : 3 pills 12 hours later.

- Monophase pill dosed at 50 micrograms of EE : 2 pills within 12 hours of intercourse : 2 pills 12 hours later.

- Mini-pills with progestogen only : 10 to 15 pills, twice at a 12-hour interval.

- Oestrogens alone at a higher dose : 5 mg of diethilstilbestrol : 4 pills a day for 2 days within 72 hours of intercourse (but there are side effects, especially nausea and taut breasts).

- Insertion of an IUD within 24 to 72 hours of intercourse.

When morning-after hormonal contraception is used, menstruation is often delayed. Another type of protection must be provided until menstruation occurs (condom, spermicides,...).

Three to four weeks afterward, if menstruation does not occur, menstrual regulation, RU 486 or a pregnancy test may be recommended. However, these methods (pills or IUD) are highly effective (1 to 5 % of failures).

STERILIZATION

Attitudes toward sterilization vary considerably, depending on the cultural context and on socioeconomic factors. In industrialized societies, in addition to the wide use of effective contraceptive methods, requests for sterilization are increasingly voiced by couples following the birth of their second child. In the Netherlands, vasectomy - male sterilization - was performed on 22 % of the contracepted population in 1989.

In other countries such as black Africa and Muslim countries, sterilization is still poorly accepted, even after numerous pregnancies. In other countries such as China, it is used as a birth control method, once a couple has two children, or even only one.

Choice of this method by a man or a woman depends on cultural factors (how much fertility is valued, women's status other than her role in procreation, men's participation in controlling fertility, assimilation of sexual potency to fertility), but also on technical factors (simplicity of performance in men) and financial ones (personnel training, equipment). Sterilization does not impair the sexual functions of either men or women. Ejaculation is the same as before, since the seminal fluid which forms 90 % of the ejaculum is excreted by the prostate, which is located further down, below the ligation. This is a highly effective method for both men and women, with a PI of 0.5 to 2 %.

While modern sterilization techniques for men and women are simple and rapid, recanalization of the tubes and the vas deferens is still a delicate operation, requiring special surgical training, and the results of which are not 100 % sure. The couple must therefore

be perfectly aware of the implications of sterilization, and of its quasi-irreversibility. In some countries, sterilization, or "voluntary surgical contraception" is regulated by law ; in others the legislation says nothing ; as a rule, the written consent of the patient or patients is demanded by the medical team. At the community level, sterilization should be depicted as a definitive method, the main characteristic of which is precisely its irreversibility.

MALE STERILIZATION

In most cases this means vasectomy, or the cutting of the vas deferens (see figure 13). Another technique is currently under study, in which the lumen of the vas deferens is obturated (reversibly ?) by the injection of silicone ; this is a costly, little-used procedure.

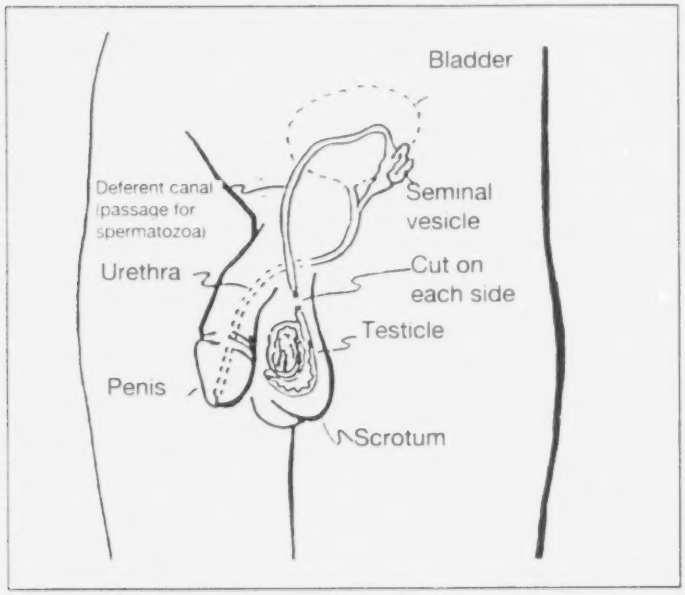

Figure 13 : Vasectomy.
Source : Ibid. 19 : 16.

Vasectomy is a simple, rapid operation, performed under local anaesthesia, and therefore under ambulatory conditions. It involves the uncovering of the vas deferens in the upper third of the scrotum, after which they are removed, following ligation of the extremities. This technique does not require any sophisticated surgical training, and practically never causes any complication (there is a slight risk of haematoma, and it is important to provide protection against tetanus). Given the time required for the spermatozoa to travel through the deferens (6 to 10 weeks), protection, through wearing of a condom, is needed during at least the first 20 ejaculations. The ejaculum retains the same volume thereafter, but no longer contains any spermatozoa.

FEMALE STERILIZATION

Obturation or cutting of the fallopian tubes prevents fertilization, which normally takes place in the inner third of the tube, close to the uterus. The tubes may be reached by three routes, endo-uterine, abdominal and vaginal.

The endo-uterine route

The endo-uterine route, with hysteroscopic monitoring, consists either of coagulating the tubal ostium, or uterine opening of the fallopian tube, on either side, or of injecting silicone (or Silastic) into the lumen of the tubes. This technique, which cannot be applied on a large scale, requires special hysteroscopy devices and specific training ; the substance used is expensive.

The abdominal route

Three techniques are available for the abdominal route. Mini-laparotomy involves an incision no more than 5 cm long, often performed under local anaesthesia ; the tubes are caught, using a hook, and ligated. This operation may easily be performed after childbirth or induced abortion, but also once the uterus has returned to its normal size. It is contraindicated in obese women, or in those with a past history of inflammation.

Laparotomy, in which the incision is larger, yields a better view of the internal genital organs, but it requires general anaesthesia. The

tubes may be knotted, then cut ; fimbriectomy - resection of the distal portion of the oviduct - is also possible, but this procedure is rarely used, and subsequent surgical correction is not feasible. In the other cases, the feasibility of re-permeabilization depends on the length of the deteriorated portion of the oviduct. These ligations may be performed during caesarean section.

Laparoscopy, or coelioscopy, is a technique requiring trained personnel and adequate equipment, but the simplicity and rapidity of which is extremely advantageous. It is often performed under general anaesthesia, but local anaesthesia is feasible, and hospitalization is of short duration (24 hours). A coelioscope, carrying special pincers, is introduced into the pelvic cavity through a small incision beneath the navel. Following complete gynaecological appraisal, the oviducts may be cauterized using an electrode, or pinched (using Young's rings or Hulka's clips). This technique does not cause any complications, so to speak, and respects the vascularization of the tube. Chances of success are therefore better in case of reanastomosis, the immediate risks mostly being connected with anaesthesia. From the surgical standpoint, the main contraindications are a prior operation performed through a median incision or a history of pelvic peritonitis. In case of failure, an increased frequency of extrauterine pregnancies is recorded.

The vaginal route

The third route is the vaginal one. Entry is performed by opening the posterior cul-de-sac, and the distal portion of the tubes is generally ligated, near the fringed pavilion. Infectious complications and haemorrhaging are more frequent, and there is an increased risk of extrauterine pregnancy.

Sterilization procedures using the vaginal route with ultrasonographic monitoring are under study : tubal obturation would be achieved by the injection of siliconated substances under local anaesthesia. Costly instruments are of course necessary (ultrasonography and silicone).

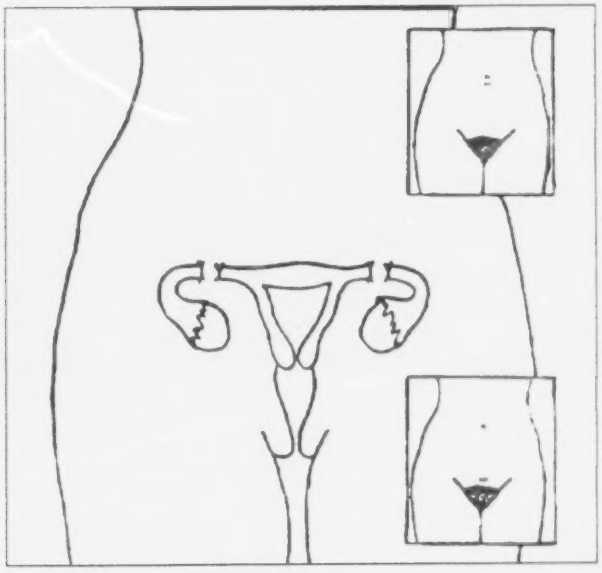

Figure 14 : Tubal ligation.
Source : Ibid. 19 : 13.

The choice of a technique depends mostly on local operating conditions : when possible, coelioscopy should be preferred, with insertion of Hulka's clips ; when conditions are less satisfactory, mini-laparotomy is recommended.

Side effects are psychological (depression owing to loss of fertility, poor preparation or insufficient prior information), or somatic: there are some rare surgical complications, and some menstrual disorders such as shortened cycles and functional ovarian cysts.

The term "sterilization" has a very negative connotation, and is increasingly replaced by the expression "voluntary surgical contraception". Such contraception should be presented as irreversible, and of course the choice must be left to the individual.

Portrait of the acceptor

The acceptor is often a woman of about 35 who has had as many children as she desired, and now wishes "to rest". She must overcome her own reticences, the fear of loss of recognition, and perhaps of being replaced. Often she must obtain permission from her husband, and his attitude will be decisive. She occasionally has contraindications for use of other contraceptive methods, or does not wish to use them, or again, does not have easy access to them. When it is well accepted, sterilization is a very satisfactory solution, and relieves the woman of the terrible threat of unwanted pregnancies. This method is and certainly will be increasingly demanded and applied.

POSTPARTUM CONTRACEPTION

The postpartum period goes from delivery, including when it is premature, to the resumption of fertility. The date of the first menstruation is determined by the duration of lactation and the frequency of feeds. To lengthen the interbirth interval, contraception should logically be begun before ovulation and menstrual cycles reoccur. However, many social and cultural factors are at work in defining sexual and contraceptive behaviour following a birth.

With breast-feeding

The first postpartum contraceptive method is of course breast-feeding, which is the only natural contraceptive method - that is, one which is involuntary, even if the lactating woman is aware that she is protected. This protection is total during the first three months, then declines gradually, and six months after delivery, 50 % of women who breast-feed at least partially are again ovulating and have their period. Suckling causes a pituitary hormone, prolactin, to be discharged into the blood stream, and the resulting hyperprolactinaemia is linked with anovulation and amenorrhoea. This anovulation explains the temporary infertility of lactating women. In populations where suckling at demand is practiced over long periods of time, the basic prolactin concentrations are maintained at high levels during the first fifteen months postpartum. As soon as the number and frequency of feeds drop, the prolactin concentration decreases as well, and the risk of ovulation and pregnancy reappears. If the woman does not become pregnant, menstruation indicates the resumption of her cycle. If complete protection is desired, contraception must be begun before menstruation begins again.

In most industrialized countries, where the mean duration of breast-feeding is short (several weeks to three months) and the number of children is low, contraception is frequently begun within a week of delivery, irrespective of the type of feeding. Conversely, in developing countries, and especially in the rural areas and in muslim countries, the forty-day taboo on intercourse remains relatively active. In Africa, women often respect much longer periods of sexual abstinence. When breast-feeding is common practice, accompanied by physiological amenorrhoea, often prolonged by the mother's poor nutritional status, this reinforces the traditional idea that women are protected, and not fertile, during one if not two years after childbirth. However, this is frequently not the case.

For mothers who do not breast-feed, ovulation generally occurs 2 weeks before the first menstruation : that is to say, 5 or 6 weeks after delivery. It is considerably delayed in case of breast-feeding, and depends on two factors : the mother's nutritional status, which

is often deficient, and the prolactinaemia level. In cities, mothers increasingly breast-feed their baby in the morning and evening, but must leave it during the day, to go to work, often at considerable distances (marketplaces). This is also the case of mothers who do not take their child with them when they go to work in the fields. As soon as the prolactin concentration drops below a certain level, ovulation may occur and another pregnancy may begin. There is much less time, then, in which to establish an effective contraceptive practice as a complement to the protection afforded by breast-feeding.

WHAT ARE THE BEST POSTPARTUM CONTRACEPTIVE METHODS ?

The traditional methods - lactation and sexual abstinence for the woman - are effective, but not for long enough a period to ensure a satisfactory interbirth interval, from the viewpoint of the health of both mother and neonate. Other alternatives are the hormonal contraceptives (progestogen only and oestrogen-progestogen) and intrauterine devices. Sterilization may also be considered.

Progestogen

Progestogen, used orally, in injections or in implants, have several advantages : effectiveness and satisfactory tolerance, with no interference with lactation (they do not modify the composition of milk, except for a slight increase in lipid content, and only 1 % of them cross into the milk). The injectable forms are also easy to administer (using disposable material whenever possible, to avoid viral contamination), and last, their cost is predictable. Their repeated use occasionally causes breakthrough bleeding.

In the industrialized countries (except in Japan, where pills are not utilized), oral progestogens - Lynestrenol 0.5 mg, Norgestrel 0.30 mg or Norethisterone 0.35 mg, 1 pill/24 hours - are widely used by lactating mothers starting from the 5th day after delivery and until weaning, at which time there is generally a changeover to an oestrogen-progestogen.

Injections or implants of progestogen may be performed immediately after delivery, while the patient is still in the maternity, or at MCH consultations, but as soon as possible. Medroxyprogesterone acetate (for three months) or Norethisterate acetate (for three months) or a Lynestrenol implant (for five years) is used. A programme for monitoring contraception must be planned.

The early administration of injections or of implants in a population where sexual taboos and lactation make conception improbable during the first months of postpartum is a costly and useless act. When conducted in urban areas, on the other hand, it affords a contraceptive guarantee which is increasingly needed, and tends to encourage and motivate mothers. Delivery and the immediate postpartum period are particularly appropriate times to talk about contraception, and to begin it if the patient agrees, or to suggest a schedule for the insertion or reinsertion of an IUD, which she will respect if she is motivated to do so.

Oestrogen-progestogen

Oestrogen-progestogen (the conventional pill) inhibits lactation if taken during the first week of postpartum. It loses this effect after three months, however, and may then be used safely. It should be prescribed immediately if the woman does not breast-feed or ceases to do so after some weeks.

Intrauterine devices

Ideally, an IUD should be inserted when the uterus has returned to normal : that is, two or three months after delivery. A number of

programmes recommend immediate insertion, or within days of delivery, but the risks of perforation, infection and expulsion are greater then. In choosing a model, those with a copper wire (T380A) or containing a progestogen (Progestasert) should be preferred, barring which one uses what is on hand !

Barrier methods for women

Barrier methods for women (diaphragms and caps) are inappropriate, for anatomical reasons, periodic abstinence is difficult to apply in the absence of cycles, spermicides often cause vaginal irritation. Condoms, on the other hand, are a good postpartum choice.

Ligation

Tubal ligation, when accepted in the immediate postpartum (as may be the case for a grand multipara, for instance) is technically easy to perform, through a subumbilical arcate incision. Often tradition requires a delay of at least forty days, to make sure the child is viable, and to enable the mother to return to the adult world, within the couple and the community. A minilaparotomy or a laparoscopy may then be performed. Vasectomy is always easier to perform.

In any event, the organization of postpartum consultations for the follow-up of the "mother-child dyad" is an essential link in the chain of action leading to an improvement of mother and child health.

Postabortum contraception

Following termination of a pregnancy, it seems obvious that a contraceptive method should be instigated immediately, so as to avoid another undesired pregnancy. Hormonal contraception may be begun immediately, or an IUD inserted ; the other methods may also be prescribed. Evacuation by curettage may be combined with tubal ligation. The same attitude may be adopted following spontaneous miscarriage, if the patient does not wish to become pregnant again right away (42) (43).

CONTRACEPTION OF THE FUTURE

In recent years, a climate of considerable reticence has surrounded scientific research on contraception, for a number of reasons. First, there are the extremely high costs involved in developing, experimenting and monitoring new products, along with the severity of norms and the complexity of the procedures for launching a new product on a national market, and especially on the American market. There are also the cultural (religious, ethical, "ecological") hindrances, which have consistently accompanied the spread of contraception as well as the introduction of new methods.

While the USA played a pioneering role in the discovery of steroid contraception (Djerassi, 1951, Pincus, 1954), the most significant recent advances have occurred in Europe (RU 486, Beaulieu - new progestogens). In this rather unstimulating atmosphere, the pharmaceutical industry has tended to concentrate on improving existing products and distributing them on new markets such as the Eastern European countries.

(42) P. DELVOYE. Lactation et contraception. Ibid. 39.

(43) A. FAUNDES. Quality of care in postpartum contraception. Presented at the International Conference on Postpartum Contraception. Mexico : s.n., 1990.

For the last decade of this millenium, research may be centred around the following poles, broadly speaking :

- hormonal contraception : reduction of doses and new modes of administration ;
- new IUDs diffusing different substances ;
- new methods for detecting ovulation (cost !) ;
- the improvement of physical and chemical vaginal contraception ;
- sterilization by the hysteroscopic route.

After the year 2000 :

- reversible male and female surgical contraception ;
- contragestation (monthly pill) ;
- LHRH peptide analogs ;
- intragonadic cybernins ;
- immunological contraception ;
- genetic engineering.

Hormonal contraception

In oral hormonal contraception, new types of progestogen are being introduced and there is a tendency to reduce doses of oestrogen, so as to lower cardiovascular risks. Monthly administration, the day before the theoretical date of menstruation, is preferred. This postcoital contragestation method has major ethical and psychological implications, while the conventional pill was a preventive method.

In contraception by the parenteral route, research is attempting to modify the amount of the active substance and of the excipient, to prolong the duration of action of injectable progestogens, and to market inexpensive, disposable material for injections or implants. Studies aim at producing injectable, levonorgestrel-releasing microspheres, which are biodegradable (and therefore need not be removed) and monthly injections of oestrogen-progestogen, in which menstruation is maintained (already in use, in South America in particular).

Percutaneous hormonal contraception requires improvement, through steroid-releasing patches. Use of the vaginal route investigates rings releasing progestogen, to be retained for three months, or oestrogen-progestogen, inserted for three weeks out of four.

"Barrier" contraception

As for "barrier" contraception, studies are concentrating on disposable diaphragms diffusing spermicides, cervical caps with a valve, new spermicides with an antiviral action, and antiviral condoms.

Intrauterine devices

In the field of intrauterine devices, there are attempts to improve insertion techniques and to develop anti-expulsion devices. Research is conducted on IUDs releasing spermicides, antibiotics, prostaglandin-synthetase inhibitors (for menstrual pain), antifibrinolytic agents and progestogen. Lengthening of their duration of action is attempted, through increasing the surface of the copper wire, or adding silver to decrease its breakdown.

For contragestation, use of RU 486 is visualized, in association with prostaglandins and a new antiprogesterone, Epostane.

A number of new avenues of research have opened up with respect to immunological contraception (antispermatozoon, anti-

HCG, antipregnancy, antiovocyte or anti-FSH vaccines), improved methods for the detection of ovulation (hormone assays by the woman herself, electronic thermometres), new sterilization techniques (reversible methods using silicone stoppers, endometrial abrasion by laser) and a number of other possibilities.

Methods for men

Methods currently available for men have a high failure rate, and many drawbacks. Only condoms combine satisfactory contraceptive effectiveness with a protective effect against STD. However, spermicides and virucidal agents should be used with them.

Surgical contraception involving vasectomy is easy to perform, but development of a reversible method (silicone, valves) is desirable. Tomorrow's male contraception should aim either at preventing the production of spermatozoa, or at immobilizing them, or again at preventing penetration of the ovum, but without impairing future reproductive ability nor decreasing sexual desire.

The role of men in controlling fertility is discussed further down. In the near future, comfortable, reliable and danger-free contraceptive methods will probably be made available for men, but will they avail themselves of them (44) ?

Table 8

AN OVERVIEW OF CONTRACEPTIVE METHODS

Method	R	S	Re	A	EU	Comments
CI	+	+	+++	+ (1)	+++	(1) Woman is totally dependent
OGINO (with CBT)	++	+++	+++	+ (2)	+	(2) Reduces natural spontaneity
Pills	+++	++ (3)	+++	++(+)	++	(3) Medical contraindications
Injections	+++	+++	+	++(+) (4)	+++	(4) Provided reasons for amenorrhoea are explained
Condom	+++	+++	+++	++ (5)	++	(5) Reticence to purchasing
Diaphragm	++	+++	+++	++ (6)	+ (6)	(6) Learning of skill required
IUD	++ (7)	++ (7)	+++	++	+++	(7) Recent advances

R : Reliability - S : Safety - Re : Reversibility

A : Acceptability - EU : Easy to use

Based on : L'enfant, Brussels : Office de la Naissance et de l'Enfant.

Contragestation

(44) F. DONNAY, La contraception de l'avenir. Ibid. 39.

ADOLESCENTS

Pregnancy

Pregnancy in adolescents constitutes between 10 and 20 % of all pregnancies in most developing countries and in some developed countries such as the USA. Their number is constantly rising. These are often at-risk pregnancies. Many are undesired, and occur in unmarried adolescents who then resort to legal or illegal abortion, performed under unsatisfactory medical and psychological conditions. This has serious health and even life-threatening consequences for these young women : the ensuing mortality and morbidity (especially secondary sterility) are quite considerable.

Prevention of undesired pregnancies and of sexually transmitted diseases in young people through educational programmes dealing with responsible sexual behaviour is a major public health challenge. This is a subject requiring in-depth discussion : only a few aspects will be developed here.

An internal conflict between the desire for a child/refusal of a child is at the heart of every contraceptive effort. Such efforts are always difficult, and particularly so in adolescent girls, for all sorts of reasons : they need to be reassured about their fertility, there are contradictory social pressures (against sexuality but pro-fertility) and above all, there is a lack of information and of receptive, helpful, competent services.

Adolescents are ambivalent about family planning : to request contraception is to "reveal" one's sexuality while dissociating it from procreation. For this reason adolescent girls sometimes "choose" the risk of an undesired pregnancy and of an abortion. Sexual intercourse may then seem to be unexpected, unplanned, undesired.

Adolescence is the period between puberty and the end of physiological maturation, which occurs between ages 15 and 19, but this definition is often extended to include 15 to 25 year-olds (WHO), or young adults, until they become economically independent (USA). This period tends to grow longer as socioeconomic development and education improve, and to become an increasingly important stage.

CONTRACEPTION AND ADOLESCENCE

Menarche, or the first menstrual period, constitutes the end of pubertal maturation. A girl who has menstruated, even just once, has then reached a certain point in her development, even if her periods come irregularly for several years, because ovulation occurs irregularly.

HORMONAL CONTRACEPTION

Hormonal methods are perfectly suitable for adolescents, who generally do not suffer from such problems as cardiovascular contraindications. In fact, these are probably the most adequate methods, since they are completely reversible and in no way modify the future fertility of these young women.

In developed countries pills are usually preferred, but trimestrial or monthly injections are also appropriate. Implants, with their five-year term, cover too long a period for certain adolescents, but they may suit some young women who have already had one child and

wish to delay the birth of the following one: Pill-taking requires a daily discipline which an adolescent in whom trust is placed can sometimes achieve more easily than an overworked, exhausted and often uneducated adult woman.

IUDs

IUDs are theoretically contraindicated, because of the risk of pelvic infection and of secondary sterility. However, an adolescent is better protected by an IUD than by repeated illegal abortions. This method has the advantage of being discrete and avoiding demanding routines.

BARRIER METHODS

Condoms make barrier methods worthwhile, of course, because they protect adolescents with occasional different sexual partners against STD including AIDS. However, condoms must be properly used, and depend on the man's behaviour. Young men seem to be increasingly aware of the importance of safeguarding their own health and that of their partners, and tend less than their elders to associate condoms with extramarital relations with prostitutes. Cervical caps and diaphragms, on the other hand, are inappropriate for adolescents since they require foreseeing of intercourse and complicated manipulations, to which young people are loath.

ABSTINENCE

Periodic abstinence is not easy when cycles are irregular and intercourse is unforeseen, and often with new partners. These are methods for steady couples, and are unsuitable for adolescents. In certain countries, however, they are practically the only methods taught, for religious reasons, and poor protection is preferable to no protection at all. Similarly, withdrawal is not a very suitable method, since young men are usually not very skilfull.

Spermicides are not contraindicated, but have two disadvantages : they are costly, and are not effective against viruses, especially against the AIDS virus.

In the year 2000, 42 % of the world population will be under 25 years old. An extremely large number of young people will therefore be entering their reproductive years at that time. The demographic future of the planet will depend on them, on how well informed they are, and on their sense of responsibilities.

Often adolescents begin their sexual life before they are sufficiently knowledgeable about their body : this inexperience prevents them from perceiving the risk of pregnancy arising from unprotected sexual intercourse. Many articles, especially those dealing with the third world megapolises, discuss the deterioration of the traditional family structure, early sexual activity in boys, but also in girls, who frequently drop out of school when they carry a pregnancy to term, the lack of health and social care for these children and for their mothers, who are usually not supported by the young fathers.

PROGRAMMES FOR YOUNG PEOPLE

JAMAICA

One of a number of original experiences is the creation of a centre for young mothers, in Jamaica, aimed at enabling girls to return to school, and more rarely to work, after childbirth. Following a period during which they were observers, fathers have begun to participate in the activities of this centre, the first of its kind, which is increasingly successful (45). Even when girls abort, they do not resort any more willingly to contraception if they do not find ser-

(45) Ibid. 21.

vices where they feel at ease and that are organized to serve their needs. One of the main qualities of such services is contact plus discretion. The latter aspect is controversial, in the light of local cultural traditions, but also because family relations are often completely upset by migration to the cities or abroad. Should sexuality and contraception be discussed with adolescents, and methods be prescribed for them, with or without their parents' consent (46) ?

The answer is different in each specific case, but it does seem essential that programmes providing information and education on responsible parenthood for adolescents be developed everywhere. Such education may be partially dispensed by peers, specially trained adolescents who find it easier to establish a dialogue with others, and help them to adopt more realistic behaviour. Providing support for adolescents and reassuring them about their own competence is often an important part of a programme (47) (48) (49).

The IPPF has devoted funds earmarked for youth to the implementation of family planning programmes in five countries : Ethiopia, Kenya, Togo, Turkey and Tunisia. An effective means had to be found for combating political and religious opposition, as well as cultural habits. All but the Tunisian project are based on two models developed in Mexico City : distribution of contraceptives, education and guidance for youth by their peers - that is, by members of their community, trained and given experience in education or in project coordination. They also receive a handbook containing instructions, distributed by the family planning associations (IPPF Program Department handbook, available in 1991).

ETHIOPIA

In Ethiopia, in particular, where demographic expansion is grounded in a natural population growth of 3 % annually, 20.8 % of pregnancies and abortions (illegal) occur in adolescents. The Ethiopian government has become conscious of this problem, further aggravated by the civil war and its economic aftermaths. The collapse of communism in Eastern Europe has weakened its authority, and made the creation of nongovernmental structures possible. Young people are sexually precocious and very active. The growing threat of AIDS has led the authorities to market and distribute condoms.

A project run by the Ethiopian association, a member of the IPPF (FGAE : Family Guidance Association of Ethiopia), has seen the light in Addis Abeba. Its target is young urban dwellers, who often live outside of any family control. Thanks to the national youth association, the REYA, it has found it relatively easy to find facilities and staff. This association has provided much financial and material support for the operation, in the hopes of gaining influence in this way. Up to the end of 1990, the main goal was the distri-

(46) Ibid. 19.

(47) G. CERNADA et al. Implications for adolescent sex education in Taiwan. Stud. Fam. Plann. 1986 ; 17, n° 4 : 181-187.

(48) D. NICHOLS, O. LAPIDO, J. PAXMAN, E. OTOLORIN. Sexual behavior, contraceptive practice and reproductive health among Nigerian adolescents. Stud. Fam. Plann. 1986 ; 17, n° 2 : 100-106.

(49) I. OYEKA. Family Planning among Nigerian postsecondary female students. Stud. Fam. Plann. 1986 ; 17, n° 3 : 146-152.

bution, free of charge, upon request, of condoms (10,000 a month - that is, 10 a month per person registered) and diaphragms. Since then, educators have been instructed to confine themselves to counseling young people and selling them condoms at a below-market price. The centre has had great success : it is attended by many adolescents, both girls and boys, and by a few parents. However, the stocks of condoms donated by the family planning associations have proved quite insufficient.

The next step is the establishment of a city-wide network of volunteer educators : this requires more substantial funding for vehicles, informational media and contraceptives (50) (51).

Among other things, these programmes aim at decreasing the number of pregnant women under age 20, since it is they who have pregnancies at the shortest intervals : in Ghana, 39 % of young women under 20 have children at an interval of less than two years, 45 % in Cameroon and 69 % in Mexico (see figure 15).

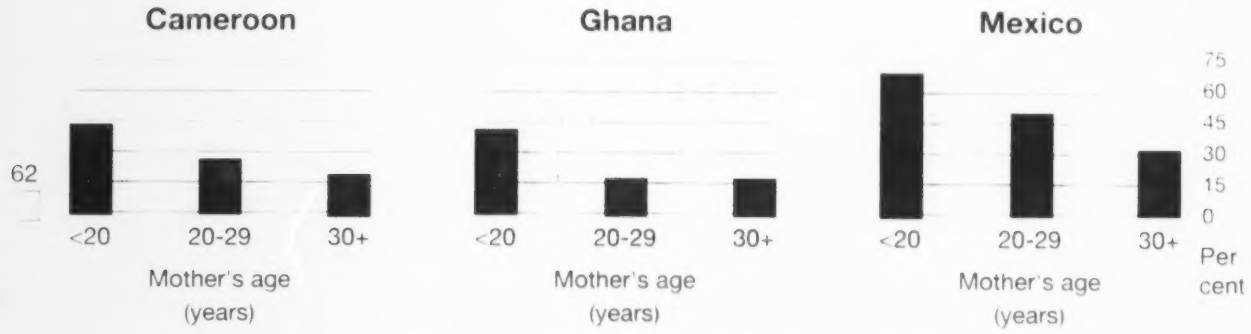

Figure 15 : Percentage of children born at the end of an interval of less than 2 years to mothers of different ages.

Source : Ibid. 16 : 27.

(50) J. TOWNSEND, E. DIAZ de MAY, Y. SEPULVEDA, Y. SANTOS DE GARZA, S. ROSENHOUSE. Sex education and family planning services for young adults : alternative urban strategies in Mexico. Stud. Fam. Plann. 1987 ; 18, n° 2 : 103-108.

(51) Ph. MEREDITH. Youth services in Ethiopia. Planned Parenthood in Europe 1990 ; 19, n° 3.

SOME EXAMPLES OF FAMILY PLANNING PROGRAMMES

PRELIMINARY REMARKS

Is the collective desire to control fertility necessarily linked with development, or to the contrary, does it arise when living conditions deteriorate ? This is a very old debate, which surfaces from time to time, and was recently returned to the forefront by events such as the Middle Eastern crisis, the destabilization of western and eastern Africa, and the worsening of the global economic situation.

In 19th century Europe, the demographic transition went hand in hand with the industrial revolution, urban development and economic expansion, the effects of which were amplified by changes in social patterns. The underprivileged strata, driven by a desire for social betterment, gradually adopted the ways of the economically powerful. Having fewer children corresponded to an improved economic situation and family educational level. This occurred before the introduction of modern contraceptive methods, through intensive recourse to traditional techniques (withdrawal and abortion, in particular), handled at an individual and family level without any contribution from governmental programmes.

At present, in developing countries, many surveys indicate the existence, within the population, of a latent demand for the regulation of fertility ; this demand becomes explicit and takes the form of contraceptive behaviour provided family planning programmes uninterruptedly offer culturally adequate services. Demographic problems have reached a point where their solution at a national scale can only be attained by the diffusion of new health and social technologies.

Fertility control is now curbed less by those elements that traditionally oppose it (religion, women's status, high infantile mortality) than by institutional obstacles (absence of sufficiently solid programmes supported by motivated, well trained agents), which outweigh the former. The main problems revolve around the human and financial resources. In Latin America, where the health system is quite closely knit, considerable, rapid advances have been made despite growing poverty and contradictory messages circulated by the Catholic Church in particular.

In the urban sprawl of developing countries, promiscuity, poverty and unemployment contribute to the rising demand, but this demand also exists in the countryside, in southern Asia, for instance (India, Sri Lanka, Bangladesh, Nepal) as well as eastern Asia (Indonesia, Taiwan, Thailand, Cambodia, Viet nam). Even in Africa, definite signs of popular concern are visible, especially among young people (aged 20-25) and the poorest women, even when they are illiterate. Recourse to abortion is an indirect, often life-threatening proof of this. Some men now favour fertility control, often more so than their wives believe. The difficulty resides in meeting this demand by making inexpensive, easy-to-use, reliable and reversible methods available to individual users, the first step to which is informing opinion leaders correctly.

Contraceptive methods are still rarely utilized in Africa, and the difference between the desired number of children and the actual number remains considerable : in Togo in 1988, for instance, it was 7.1 for 5.3 desired. Of the 33 % of women who used some method when the survey was conducted, the vast majority (30 %) used a traditional method, and only 3 % a modern one. While taboos on postpartum intercourse are waning and breast-feeding periods are shortened in suburban settings, recourse to modern techniques has scarcely increased (7 % of women as against 2 % in rural areas, in Togo) and for the moment the result is a rise in annual population growth (6.1 % in Lomé, capital of Togo, versus 2.4 % in the countryside). Infantile mortality remains high, and yet the survey corroborates the fact that half of those women who already had five children did not want any more, that one out of four couples did not want any more children, and one out of two wished to leave an interval before the next birth (52).

Similarly, recent surveys in east Africa show that the potential demand for family planning is increasing. In Kenya, for instance, in 1989, 26 % of married women questioned wished to put off their next pregnancy for at least two years, and 49 % did not want any more children. And yet, only 27 % of them used any contraceptive method at all. Nonetheless, the prevalence of contraception had increased considerably between 1984 and 1989 in all three countries studied : from 16 to 33 % in Botswana, from 17 to 27 % in Kenya, from 38 to 43 % in Zimbabwe (53).

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Between Bucarest-1974 and Mexico City-1984, then, the gap between conflicting opinions has been closing. Although some researchers still disagree, there is now a consensus around the fact that an uncontrolled increase in population heightens underdevelopment. Demographic policy is an essential part of social and economic development, and there is a real demand for it. Social action and fertility control are more successful if they work hand in hand. Family planning programmes contribute effectively to reducing fertility, and the prevalence of contraception rises when they are vigorous, even in the least developed regions (54).

There is no single solution, of course, and great flexibility in programmes is essential if responses are to be found to a process which itself is multifactorial. A programme crystallizes unexpressed expectations and legitimates them, facilitating the passage from a traditional fertility pattern to a "modern" one, especially for the poorest, least educated people.

This process will be illustrated by examples in Tunisia, Rwanda, Togo and Burkina Faso, followed by Bangladesh. While the programmes selected are no doubt not representative of the different continents, each of them does have some specific value.

(52) Ibid. 48.

(53) V. POOLE. Fertility drops in some countries of Sub-Saharan Africa. Population Today 1991 ; 19, n° 3.

(54) Ibid. 49.

TUNISIA

Tunisia is in the vanguard with respect to family planning and demographic policy in Africa. In 1964, Tunisia became the first arab country to officially adopt the reduction of fertility as a means of facilitating socioeconomic development. Between 1965 and 1983, the birth rate dropped from 48 to 31 per thousand. The prevalence of contraception rose from 10 % in 1975 to 42 % in 1983, and an estimated 34 % of women of child-bearing age used a modern method in 1983.

The family planning programme is part of a vast effort undertaken by the government to reduce population growth : in 1960, no family subsidies were allocated beyond 4 children, in 1964 the legal minimum age for marriage was raised from 18 to 20 for men and from 15 to 17 for women, and in 1973, abortion on demand was made legal. The rate of prevalence of contraception is the highest in the region, and the birth rate the lowest.

The government programme run by the ONFP (Office National de la Famille et de la Population) supplies about three quarters of users with family planning methods. Pharmacies and shops sell oral contraceptives, condoms and spermicides. Private doctors also offer family planning services.

One of the main problems centres around the rural areas. Surveys have shown that women living in the country wish to use family planning but do not know where to go for it. To fill this gap, the ONFP adopted a mobile family planning service model in 1968. At present, teams composed of a midwife, an assistant, a driver and occasionally a woman facilitator from the rural community visit the rural health centres. Aside from supplying contraceptives (pills, IUDs, condoms and spermicides), these teams perform pre- and postnatal examinations, and refer patients for surgical contraception if they so desire (55).

Mobile family planning services

In 1982, when mobile clinics were set up, these services could be extended to regions which did not dispose of adequate health centres. In 1986, the ONFP, in collaboration with the Population Council, conducted a survey on the cost/effectiveness ratio of these mobile services. This system is definitely more costly than the fixed health centres, but it seems to be more appropriate than the establishment of new structures for people living in outlying areas (56).

Another study shows that the inclusion of an IEC element (information, education, communication) in mobile programmes would be more effective than the creation of a new service in which no such activities was included. Experience shows that rural women facilitators are capable of informing people and distributing contraceptives. The Tunisian government might improve the cost/effectiveness of its services by adding an IEC facet to the work of mobile

(55) Ibid. 8.

(56) F. COEYTAUX, D. DONALDSON, T. ALOUI, T. KILANI, H. FOURATI. An evaluation of the cost-effectiveness of mobile family planning service in Tunisia. Stud. Fam. Plann. 1989 ; 20, n° 3 : 158-169.

teams, thus optimizing their action. This study further indicates that IEC campaigns have a measurable impact on the effectiveness of the programme (57).

Forty days after delivery

Last, one extremely interesting aspect of the Tunisian example is the Sfax postpartum programme. Mothers are invited to return with their babies to the maternity forty days after delivery, at which time they resume their responsibilities within the family, and may appear in public for the first time. Surveillance is provided for the mother (gynaecological examination, family planning guidance) and for the child (breast-feeding, immunization programme). Family planning services are depicted as improving the mother's health and the child's physical and mental development. This programme is a success, since a great many women come for their appointment (58).

Four lessons may be drawn from this experience. First, it is important to offer a family planning method at a time which is highly meaningful from the viewpoint of both tradition and religion : the fortieth-day appointment is not forgotten, since it is fully significant. Next, the fact that the programme is centred around the mother-child dyad resulted in effective health monitoring, satisfaction for the patients and for the staff. This revealed the extent of the unexpressed demand for integration of neonatal care in family planning action. Further, as always, a wide choice of methods - tubal ligation (feasible immediately after delivery), insertion of IUDs, distribution of spermicides and of condoms, but also access to low-dose progestogen oral contraceptives, particularly suitable during lactation, but still not easily accessible - increases the number of users. And last, satisfactory collaboration between paediatric and obstetrics-gynaecology departments is a crucial element in the success of the programme, and the motivation of those in charge improved as the programme's popularity increased.

RWANDA

In Rwanda, demographic pressure is a major problem : there are 7.1 million inhabitants (270/km²), 91 % of whom are farmers, and all available land is already farmed. In 1990, J. May, M. Mukamanzi and M. Vekemans (59) analysed the factors determining fertility and the family planning programme so as to determine guidelines for a future programme designed to fit the needs of the population of age for contraception. Is the low prevalence of contraception (2 to 4 % of women of child-bearing age) due to a slight demand, or an insufficient supply of services ?

The total fertility index in Rwanda is 7 to 8 children per woman : this is half of the theoretical maximum. However, most women desire more children, and only space births for the good of the first-born's development. The natural rate of population growth is 3.7 %, so that the population doubles every twenty years. Bet-

(57) *F. COEYTAUX, T. KILANI, M. Mc EVOY. The role of information, education and communication in family planning service delivery in Tunisia. Stud. Fam. Plann. 1987 ; 18, n° 4 : 229-232.*

(58) *F. COEYTAUX. Celebrating mother and child on the fortieth day : the Sfax, Tunisia postpartum program, quality, calidad, qualite. New York : Population Council Series 1989.*

(59) *J. MAY, M. MUKAMANZI, M. VEKEMANS. Family planning in Rwanda, status and prospects. Stud. Fam. Plann. 1990 ; 21, n° 1 : 20-32.*

ween 3 and 4 % of "at-risk" women use a modern contraceptive method, essentially in the urban centres. As in most countries in Sub-Saharian Africa, mortality rates, and especially infantile mortality, have dropped sharply in the last thirty years. Marriage occurs late (age 21 for women, 24 for men, on the average). However, fertility has increased with the drop in the duration of breast-feeding and of postpartum abstinence (one week).

The government is aware of the extent of the problem. The Catholic Church, preeminent here (50 % of the population is catholic) has now dropped its strongly pronatalist policy and recommends some degree of regulation of fertility, but only through periodic abstinence. The Protestant churches have opened family planning centres.

Many obstacles limit the circulation of modern contraceptive methods. First, "the transmission of life" is a sacred obligation to one's family and ancestors, and the survival of the lineage must be ensured by producing mostly boys. A family's honour and prestige is tied to the fact of having many children, personal achievement is accomplished within a large family, and the number of children should not be limited, but should be accepted as a gift of God. Traditional wisdom favours birth spacing : danger of excessively early weaning of the previous child, weakness of children who arrive too soon after the previous one, difficulty of working in the fields if births occur in rapid succession. There are traditional methods for delaying pregnancy, including rituals of a magical nature at childbirth, coitus interruptus, prolonged breast-feeding, periodic abstinence and use of abortive plants. Their main purpose is to ensure continued fertility while ensuring the optimal chances of survival for the first-born child. As mentioned elsewhere, husbands are often opposed to contraception.

The Catholic Church is influential within the health services, since it runs most of the clinics, and the best-equipped ones, but these encourage periodic abstinence only. It is well known that illiteracy is not conducive to fertility control. As in many other cultures, children represent financial security for parents in their old age. Last, family planning services within public health centres are infrequent, they are not a part of MCH centres, and their stocks of contraceptives are inadequate.

Major efforts have been made, under the auspices of the ONAPO (the agency in charge of evaluating national fertility). In 1985, 20,669 users had attended 152 FP centres. 55 % of them used injectable progestogen, 35 % pills, 5 % an IUD and 5 % condoms. Although these figures are on the rise (40,000 patients, 232 centres), the demand is still not satisfied, since an ONAPO survey has shown that women had an average of 8.6 children and only desired 6.3. It may be deduced that 25 % of pregnancies are accepted but not desired, and might have been avoided had couples had access to modern, well-supplied FP centres.

The development plan for the FP programme shows that if a TFI of 6.5 children per woman is to be reached by 2001, a contraceptive prevalence of 30 %, or 500,000 users, is required. However, a TFI of 4 children per woman - more suitable for the territorial and socioeconomic reality of the country - would imply a prevalence of

60 %, or 900,000 users ! This is a challenge, and a wager that is most difficult to win. Emphasis must be placed on education about responsible fertility, on the diversification of methods, with hormonal methods in the forefront, since use of IUDs in this country may well increase the incidence of pelvic infection, on the fight against AIDS through the distribution of condoms, whose rather negative image must be modified, and on the necessary multiplication of FP units within MCH and primary health care centres.

TOGO

The demographic and health survey conducted in Togo in 1988 constitutes the most complete source of information on the population of Togo and its health. On the basis of a national sample of 3,360 women aged 15 to 49, it up-dated knowledge on demographic indicators such as fertility and infantile mortality, as well as on trends in them during the past decade. It also provided data on knowledge about and use of contraception and basic information about mother and child health and the nutritional status of children under 3 (60).

The authors reached the following conclusions : marriage is still universal, at least for the female population, since almost all women (99 %) had been married at least once by the age of 40. However, women's first marriage was found to take place at a later age : before age 20, 3 out of 4 women are not yet married, and the median age of women at first marriage is 18.4. One woman out of four (23.2 %) had been married more than once.

As for the proximal determinants of fertility, Togolese women breast-feed for an average of 22.6 months, their amenorrhoea lasts 14.4 months and postpartum abstinence lasts 17.5 months.

The level of fertility has remained practically the same for some time. The total fertility index for women aged 15 to 49 was 6.6 children, whereas women aged 45-49 had borne 7.3 children. Median age of onset of fertility was about 19 years. The future trend for fertility seems to be downward, since the younger generations marry later than their elders, but also have a relatively lower fertility rate. However, this trend is relativized by the low prevalence of modern contraception : 3.4 per cent. Some so-called natural methods such as prolonged abstinence (21.8 %) and to a lesser extent periodic abstinence (6.4 %) are widely used.

In Togo, national and international efforts have not had the expected success. A complete reorganization of the fertility regulation programme, including the management and delivery of stocks of contraceptives donated by nongovernmental associations, should be considered.

Following a mission conducted for the UNFPA in 1988 (61), D. Pierotti formulated a number of recommendations. He suggested the reinforcement of the staff, equipment and facilities of the birth-spacing unit at the central level, the creation of technical organs for coordination, the extension of clinical services and also of non-medical distribution points, the establishment of a national super-

(60) A. AGOUNKE, M. ASSOGBA, K. ANIPAH. Enquête démographique et de santé au Togo. Columbia : Demographic and health surveys, 1988.

(61) D. PIEROTTI. Rapport d'une mission FNUAP au Togo, 1989.

visory network along with birth-spacing activities within preventive programmes at the peripheral care unit level. He also thought it desirable to rehabilitate birth-spacing data within the national system for the collection and analysis of health statistics, and to make the ordering, supply and delivery of contraceptives a part of the normal pharmaceutical distribution network.

Last, D. Pierotti felt it essential that FP courses be made a part of the basic training of doctors, midwives and nurses, and that legislation be passed on access to contraception.

BURKINA FASO

The government programme for family planning in Burkina Faso dates back to 1985, before which time there was very limited access to contraception through private channels. The government set up easy access to services, with no administrative obstacles, by integrating health agents from different professions and eliminating the blood tests unnecessarily demanded at the outset of the programme.

A survey on "Knowledge, Attitudes and Practices" was conducted in the capital, Ouagadougou, in 1986 (62). It showed an astonishingly high level of passive acquaintance with contraceptive methods (64 % of the women questioned had heard of family planning), and yet only 4.9 % were using a modern method at the time of the survey (pill 2.5 %, IUD, injections, spermicides, condoms), 48 % of the women questioned resorted to abstinence, 41 % of them were in the postpartum period, and apparently practiced abstinence more in respect for tradition than as a way of delaying their next pregnancy.

Knowledge about family planning depended both on educational level and on religion (Christians were better informed than Muslims). Most interviewees (70 %) expressed a desire to space births and to limit the number of children, and claimed to favour the development of contraception. They viewed the optimal number of children as only 4 : 30 % of those questioned already had 4 children and did not want any more, and this figure was over 60 % for those who had 5 children or more. Most women who did not desire another pregnancy in the immediate used a traditional method, essentially abstinence (very few men practice withdrawal), but it is well known that the duration of abstinence tends to decline in young women living in cities and with some education.

It is noteworthy that the men questioned expressed a desire for a surprisingly small family - for Africa (4 children, on the average) - and wished to have additional information on family planning (80 % for themselves, 76 % of married men for their wives), although their reactions in no way guarantee that they were ready to use these methods, or that they would not have more children than they desired.

The authors of the survey conclude that there is some knowledge of family planning methods and an intention to limit the size of the family, at least among young adults. Although the use of modern methods remains extremely limited, the people questioned were

(62) T. MC GUINN, P. SEBGO, T. FENN, A. BAMBA. Family planning in Burkina Faso : Results of a survey. Stud. Fam. Plann. 1989 ; 20, n° 6 : 325-331.

very receptive to additional information, and male attitudes toward family planning were more positive than is generally believed. These findings corroborate the outcome of other surveys conducted in Senegal and in Ghana, and more recently in Nigeria and Kenya (63) (64) (65) (66).

Responsible fertility

Following a rather pessimistic review of some family planning programmes in Africa, the example of Burkina Faso illustrates the forces present, and is a source of relative optimism. In this small, multi-ethnic country, one of the poorest in the world, with only 12 % of literate adults, where the family structure is dominated by men and the average number of children per woman is 7.3, the population expresses the same reticence to contraception that has been discussed at length elsewhere. However, young men and women also show an increasingly obvious eagerness to control their fertility in order to limit the number of children they have, whence a growing demand for information on family planning. The notion of "responsible fertility" is taking shape. Men are concerned with the financial situation of their household, and the health of their children. The fears generated by modern methods are waning somewhat. Intellectuals returning from developed countries bring back information and different behaviour patterns. Contraception is no longer only an imported concept, fundamentally alien to Africa.

Family planning is still frightening, however. Men are afraid they will lose their children, all of their children, swept away by disease. They fear the new drugs and devices, which reputedly are harmful to health or detract from the sexual potency of their users. They also fear, probably rightly so, that family planning will modify the balance of man-woman relations. Supply of fertility control programmes in Africa has probably preceded demand. Will it now be able to follow demand, and with what resources ?

BANGLADESH

This example illustrates the question that is at the heart of the debate on fertility control : can a programme succeed without concomitant socioeconomic development, or at the least, without a major improvement in the standard of living ?

The family planning programme conducted in the Matlab province was evaluated between 1977 and 1984. In these few years, this project (the Matlab Family Planning-Health Services Project) recor-

(63) T. MC GUINN, A. BAMBA, M. BALMA. Connaissances et utilisations des methodes de planning familial par les hommes et attitudes masculines a leur egard au Burkina Faso. Perspectives Internationales sur le Planning Familial 1989.

(64) BURKINA FASO - Ministère de la Sante et de l'Action sociale. Rapport final du projet de recherche operationnelle sur l'integration des services SMI/PF/NUT dans la ville de Ouagadougou. New York : Center for Population and Family Health 1990.

(65) BURKINA FASO - Ministère de L'Education Nationale. Strategie d'introduction de l'éducation en matière de population dans le systeme d'éducation formel. New York : FNUAP/UNESCO 1985.

(66) Association Burkinabé pour le bien-être familial. Rapport triennal 1990-1992. Ouagadougou.

ded a remarkable rise in the prevalence of contraception, which reached 40 % in 1987, along with a reduction in demographic expansion.

In 1977, the International Centre for Research on Diarrhoeal Disease (currently extremely active in the fight to control cholera and other epidemics brought on by the recent floods) inaugurated a mother and child health programme in the rural region of Matlab. In half of the villages only governmental family planning services were available, whereas the other half benefitted from an intensive programme with emphasis on easy access, and more particularly the intervention of health workers from the community, feminization of the medical and paramedical professions, an elaborate supervisory system and availability of a broad range of methods (67).

Although strict comparison of the two regions is not feasible, the prevalence of contraception was found to have risen from 5 to 33 % in 18 months in the area receiving an intensive programme, with a 25 % drop in TFI : in 1980, the average number of children per woman was 4.6, while it remained at 6.4 in the control area. In 1975, the prevalence of contraception was 7.8 % (modern methods : 4.9 %), compared to 4.7 % in the control area (modern methods : 0.4 %). Following several months of application of the programme, prevalence rose to 24 % of 20 to 24 year-old women, and in 1984, 39 % of this group was using a contraceptive method (injections, 37 % ; tubal ligation, 24 % ; IUD, 20 %). In the control area on the other hand, only 16 % of women were contracepted in 1984, and sterilization headed the list of methods, with 50 % of users. For a number of years, family planning programmes in different countries including Bangladesh tended to promote sterilization, especially of women, which was inexpensive because definitive, with bonuses for women acceptors and for the recruiting agents. The current trend is toward proposing a number of methods.

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Comparison with the control area showed a moderate but significant drop in maternal mortality, mostly due to the decrease in the total number of pregnancies in the area where the programme was run.

Prior to implementation of the programme, the optimal family size desired by interviewees was 4.5 children (including 2.7 boys). This did not change much in the course of the programme. The youngest women (ages 20-24) expressed the desire to have only 3.3 children, including 1.5 sons). Although the educational level had improved in some areas, it was among the least educated women that the desired number of children had dropped most.

There is a latent demand for fertility control, then, particularly among the most underprivileged women. Many of these do not want any more children at all, partly because they have had more children in their youth than better educated women. Comparison

(67) M. KOENIG, J. PHILLIPS, R. SIMMONS, M. ALI KHAN. Trends in family size preferences and contraceptive use in Matlab, Bangladesh. Stud. Fam. Plann. 1987 ; 18, n° 3 : 117-127.

with the control area, where the programme was not as complete, actually corroborated the fact that the notion birth-spacing was not as well comprehended by people there.

In a country with a constantly deteriorating socioeconomic situation, a latent demand for family planning may finally express itself, in the long run, if it becomes feasible for couples to space births and ultimately to limit the size of their family. In rural Bangladesh, such a demand has been in existence for many years : it was already present in 1975, and expanded from there on, but there were neither sufficient services nor supplies of contraceptives to respond to it properly.

What determines change ? Epidemiological analyses point to some factors within the programme, and to some external factors. They show the influence of education and of the development of means of communication, the worsening of economic conditions and of impoverishment, exogamic practices between villages and the circulation of behaviour patterns from the area with the programme to the control area. At the health sector level, it should also be noted that both male and female agents from the family planning project visited homes more often, that the medias were used to diffuse family planning messages and that services were improved (68) (69) (70).

The existing demand can only be translated into contraceptive prevalence, then, if high-quality services are afforded to couples, and more particularly to those couples - the majority in rural areas - who are "ambivalent" or "indifferent" at the outset. There remains the question of the cost/effectiveness ratio of the programme, and of its extension to all of Bangladesh. This aspect has not been discussed here because it varies enormously from one place to another, owing to the importance of local factors.

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The example of Bangladesh does point to one especially interesting conclusion, which is valid for other developing countries : the programme acts by "activating" the latent but still fragile demand, by making it manifest and, when possible, by responding to it in a number of ways, by making sure supplies are in stock, continuing to circulate information and training health agents who are close to the population.

Health workers, who may be women belonging to the rural community, for instance, must cope with considerable demands present within the population ; qualitative studies have shown that for peasants, the use of contraceptive methods is closely linked to access to adequate mother and child care and reproductive health

(68) M. LOENIG, V. FAUVEAU, A. CHOWDHURY, J. CHAKRABORTY, M. ALI KHAN. Maternal mortality in Matlab, Bangladesh : 1976-85. Stud. Fam. Plann. 1988 ; 19, n° 2 : 69-80.

(69) R. AMIN, G. KAMAL, S.F. BEGUM, H. KAMAL. Menstrual regulation training and services programs in Bangladesh : results from a national survey. Stud. Fam. Plann. 1989 ; 20, n° 2 : 102-106.

(70) R. SIMMONS, M. KOENIG, A.Z. HUQUE. Maternal-child health and family planning : user perspectives and service constraints in rural Bangladesh. Stud. Fam. Plann. 1990 ; 21, n° 4 : 187-196.

services. This link is a positive one for the development of the programme, but raises a number of problems with which community agents are unable to cope. There are many operational obstacles, involving, among other things, the number of health workers, their motivation, their technical competence and the supply of contraceptives (71) (72).

(71) S. BATHIA. Patterns and causes of neonatal and postneonatal mortality in rural Bangladesh. Stud. Fam. Plann. 1989 ; 20, n° 3 : 136-146.

(72) M. KOBLINSKY, S. GRIFFEY BRECHIN, S. CLARK, M. HASAN. Helping managers to manage : work schedules of field-workers in rural Bangladesh. Stud. Fam. Plann. 1989 ; 20, n° 4 : 225-234.

A BRIEF REVIEW OF METHODS FOR EVALUATING FAMILY PLANNING PROGRAMMES

A. JOURDAIN

There is no standard method for evaluation : rather, there are different approaches depending on the goal sought. A distinction is generally made between evaluation - an assessment aimed at establishing as complete an inventory as possible of the activities and results of family planning services, and evaluation integrated in a project, which is constructed around planned objectives and activities. The latter may be on-going, performed on the basis of data collected routinely, specially for this purpose, throughout the lifetime of the project, or summative : that is, with indicators calculated and discussed at the end of the project activities.

Two broad types of data are provided by services : first, certain features pertaining to new acceptors, such as profession, age, place of residence, years of education, number of live children, of pregnancies, of abortions ; these define their matrimonial situation. There is no need to collect this information at each visit, since it remains stable in the moderately long term. Information pertaining to subsequent visits then shows the follow-up of contraception : calendar of visits, method prescribed, date of next visit, side effects, discontinuation and reasons.

DIAGNOSTIC EVALUATION

Diagnostic evaluation is the estimation of how a project is functioning at a given time. This form of evaluation is done in response to a specific assignment, when an evaluator or a team is asked to produce a report on the activities of a project or of a service.

An evaluation-assessment generally limits itself to a few points indicative of the overall picture, in order to answer questions on prevalence (proportion of users of different contraceptive methods), continuity of attendance of services, and description of the clientele participating in family planning programmes.

To answer these questions, the best methods, at present, are the calculation of couple/years of protection, the continuation rate, measured by an actuarial table, and analysis of the clientele.

Calculation of couple/years of protection

Calculation of couple/years of protection is based on a number of hypotheses which make it possible to compare the number of contraceptives distributed and the level of protection actually afforded against an undesired pregnancy. Intuitively, one pack of pills may easily be seen to afford contraceptive protection for a single menstrual cycle. Since a woman has 13 cycles per year, the number of packs of pills required to protect her for one year is therefore 13. The coefficient of protection, in this case, will be 1/13.

The total protection afforded by all of the methods sold or distributed is obtained by multiplying the amounts of these products by the corresponding coefficient of protection. For example, 26,000 cycles of pills sold afford protection to 2,000 women for one year (26,000/13).

To give a general idea, the coefficients of protection of the different contraceptive methods are 1/13 for oral contraceptives, 1/120 for condoms, 1 for IUDs and 1/4 for trimestrial injectables.

The above method is easy to use at a national scale, and is a palliative when information is in short supply, usually for lack of surveys of the KAP type (knowledge, attitudes, practices with respect to contraception).

The standard population Method

The standard population method evaluates prevalence through standardization techniques used in demographic studies : national contraceptive use rates per age group are applied to the age pyramid of the area under study. This then shows the proportion of contraceptive coverage provided by public family planning centres.

In one region, for instance, a public family planning centre provides follow-up for 3,500 women with IUDs. Should the staff of this centre be believed when they assert that they alone provide 50 % of contraceptive coverage ? A national survey shows that the proportion of IUD-users is 0.4 % at ages 18-19, 2.7 % at ages 20-24, 14.9 % at ages 25-29, 25.6 % at ages 30-34, 27.8 % at ages 35-39, 25.3 % at ages 40-44 and 14.2 % at ages 45-49.

If these utilization rates are applied to the population of this particular area, the following estimation is obtained :

Table 9

ESTIMATION OF AGE-LINKED UTILIZATION RATE

Age	Rate	Population	Number of users
18-19	0.4	8,000	32
20-24	2.7	8,550	230
25-29	14.9	8,300	1,236
30-34	25.6	9,100	2,329
35-39	27.8	9,000	2,502
40-44	25.3	7,500	1,897
45-49	14.2	7,000	994
TOTAL		57,450	9,222

The centre provides follow-up for 3,500 persons out of a total of 9,222, estimated on the basis of national figures. It tends to considerably overestimate its impact, then. This method is also applicable in countries where use of contraceptives varies greatly between different social groups, owing to the recent introduction of family planning. In such cases, rather than the national rates, it is the rate of distribution for types of habitat (rural or urban) or educational levels which is used, depending on whether the desired infraregional estimation is designed for a developed area or for a less developed one.

Length of use

To refine measurement of the overall protection afforded by contraception, the average duration of use is generally considered. This, in combination with prevalence and effectiveness, determines the quality of coverage actually provided by these methods.

Intuitively, calculation of the mean duration of protection is simple : for instance, three couples used the pill continuously during 4 months, 18 months and 32 months respectively, then stopped. The average duration of use is therefore (4 + 18 + 32) : 3 = 18 months. Calculation of the simple arithmetic mean is sufficient to determine an overall indicator of continuity. In reality, however, this calculation is far more complicated. In any service, the complete periods of use of contraception are only known once the client stops using the method ; this often would make it necessary to wait too long before evaluating the present situation.

Let us take the data yielded by exploitation of records from a health centre or a doctor's office. For each individual, there is a date of first use of contraception and either a date of discontinuation or no information since the last visit, since the person is still using the same contraceptive method. On the basis of these data, using actuarial tables, the average duration of use of a contraceptive method may be calculated for a given region.

Study of the clientele

In addition to the indices discussed above, evaluation of a programme requires a description of the characteristics of the clientele attending the services (age, social category, educational level).

FORMATIVE OR ONGOING EVALUATION

This second group of evaluation methods includes all techniques using data that are routinely collected during the follow-up and management of a programme. In this case, it is not enough to use information picked up here and there ; a data system specifically designed to describe the functioning of a service must be constructed. Such data are usually published by the service in its annual report. The central element is the project's log book, which makes possible the readjustments required for satisfactory running of activities.

Ongoing evaluation is a part of this managerial type of approach, and checks on how projects are going, as well as on their efficiency, which is to say their effectiveness at lowest cost (cost/effectiveness, cost/benefit or cost/advantage).

Two main aspects are involved in ongoing evaluation : studies of costs through indicators of results such as the number of consultations, the time devoted to each one and income, and studies of the quality of services using a number of criteria such as the choice of methods proposed to attenders, the quality of the information, the competence of staff, the quality of relations, of reception, of follow-up, the diversity and integration of services.

Comparison of these indicators with the results obtained is generally useful in supervising services.

The rules for selective supervision are as follows :

- a supervisor is in charge of facilitating family planning activities of centres in a given geographic area ;

- monitoring indicators are defined so that different services may be compared ;

- following analysis of achievements, those centres which are furthest from the norm are visited so as to determine the causes of difficulties ;

- work is done with the teams on themes susceptible of improving the quality of services : supervision is not control or inspection, it means working with local teams to find solutions. For example, let us take one evaluation criterion, "choice of the method". In one country, the following results are found :

Table 10
METHODS USED IN DIFFERENT HEALTH CENTRES

Centre n°	Ogino	Diaph-ragm	IUD	Pill	Condom	Sperm-icides	Injec-tables	No resp	Total
1 ef	0	0	18	120	17	6	0	38	200
%	0	0	9	60	8	3	0	19	100
2 ef	0	0	2	5	0	0	0	1	8
%	0	0	25	62	0	0	0	12	100
3 ef	0	1	39	119	7	5	4	25	200
%	0	0.5	19	59	3	2	2	12	100
4 ef	1	0	20	47	6	0	3	4	81
%	1	0	24	58	7	0	3	4	100
5 ef	0	1	40	76	18	0	0	2	137
%	0	0	29	55	13	0	0	1	100
6 ef	0	0	40	134	20	0	0	1	199
%	0	0	22	67	10	0	0	0	100
7 ef	19	0	21	51	1	0	4	23	119
%	16	0	18	43	1	0	3	19	100

For this specific criterion, several points must be clarified during supervision, which should pay special attention to centre n° 1, since it has a larger number of patient files than the other centres, and offers very few methods ; only one method is used by more than 10 % of women, whereas this is the case for two or three methods in the other centres.

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Supervision in the field is careful to identify the causes of any weak points : lack of training of doctors, unsatisfactory information of the population, etc.

PROJECT OR SUMMATIVE EVALUATION

This is a formalized assessment showing whether the predefined objectives have been met and providing the means of judging a programme. This is the most thorough type of evaluation, but also the most sophisticated, and the most difficult to perform. It requires rather complex procedures such as longitudinal studies and sample-control surveys. These require the accurate definition of working postulates, which are not necessarily explicitly formulated in the programme documents ; this type of evaluation comes close to the research methods employed in the social sciences, with their constraints. Different experimental protocols exist for the achievement of such evaluations. They are briefly described below, and labelled O for observations and X for actions.

Simple evaluation

First, there is simple evaluation, performed following an action following an experimental plan of the XO type ; that is, an intervention followed by an evaluation. Its shortcoming is that it does not supply any information on the prior state of the population being evaluated. Classical examples of this procedure are the world fertility survey, or technical secondary school diplomas in FP. This pro-

vides general information on fertility and health within the country but also shows the population's attitude toward reproduction. Responses showing the interviewees' opinion on subsequent pregnancy are compared with the prevalence of contraception : this accurately measures the need for services. This indicator of needs may be compared with the desires expressed by the population for use of contraception in the near future.

An informational programme may be based on responses to questions on what methods are known to women or on the main causes of discontinuation of contraception.

Another type of evaluation is known as "before-after" ; it measures trends affected by public health action. Some countries, such as France, conducted the same survey at a ten-year interval on a representative sample of the national population. This showed the changes in overall behaviour. One advantage of this technique is that it measures changes in behaviour accurately, but it does not show how much of the actual change may be attributed to the programme and how much to other causes.

Evaluation using sample and control

Last, there is the evaluation using sample and control groups, which records differences between the control population and the object of the intervention. The pattern here is OO, OXO. This is a more accurate method, but one requiring observance of a strict methodology, which is often difficult. For example, a study of changes in young people's behaviour following a health promotion action in a Baltimore school showed results to be good. This action involved information sessions and the setting up of a consultation at which contraceptives were available. At the end of 28 months, the pregnancy rate had dropped by 30 % in the target schools, whereas control schools experienced a 60 % increment.

The main difficulties encountered in this type of investigation include the choice of a control group comparable to the group that was exposed to information, the random appointment of individuals to the two groups, or at the least, making sure that both groups are similar, so as to avoid biases.

In conclusion, there are many means available for evaluating a family planning programme. The first problem is of a strategic rather than a technical nature, and involves the goal sought. Is it an overall assessment, with no predetermined objectives ? Is there a need for an ongoing evaluation process for the management of a project targetted to achieve some critical points, or for a precise scientific investigation of the efficacy of a programme ? What resources are available for this work ? These are the main questions to be answered before selecting an evaluation method (73) (74) (75).

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(74) OMS-Euro. Unité de Sexualité et de Planification Familiale, atelier international en evaluation des programmes de planification familiale. Rennes : ENSP/OMS 1989.

(75) A. JOURDAIN. Evaluation des programmes de planification familiale, Atelier International sur la Planification Familiale, OMS/EURO/Ministère de la Santé de Roumanie 1990.

APPENDIX

RECORD CARD - FAMILY PLANNING

Ministry of health - WHO-MFH (Rumania)

Surname - First name - Birth date - Code - Address

Marital status : married - unmarried - divorced/separated - widow

Age : 15-19 / 19-29 / 29-39 / >40

Education : primary - secondary - university - other

Status : occupation - unemployed - housewife - other

Religion - none

Obstetrical and gynaecological history :

number of children - date of last delivery

number deceased - age

number of miscarriages - number of induced abortions - EUP - menstrual disorders

Medical history : diabete - epilepsy - hypertension -
thromboembolism - cardiopathy - genetic disorders.
substance abuse : alcohol, tobacco, drugs -
liver ailments - other

Surgical history

Medication

Motivation/FP : enough children
financial reasons
mother's health
personal conflicts

Contraceptive method : used previously
presently chosen
pill - injection - IUD
spermicide - condom - other

Sterilization : female - male

Reason for consultation : induced abortion
FP
gynaecological examination

Contraceptive follow-up : date - examination - prescription
efficacy - side effects
tolerance

Attitude of spouse/contraception - method chosen
age - occupation

Past history

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Imprimerie Rosay, 47, avenue de Paris, 94300 Vincennes - Dépôt légal : 4e trimestre 1991 - N° 17382
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